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Pacific
MARINE
REVIEW

BLUE RIBBON EDITION

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MARITIME COMMISSION

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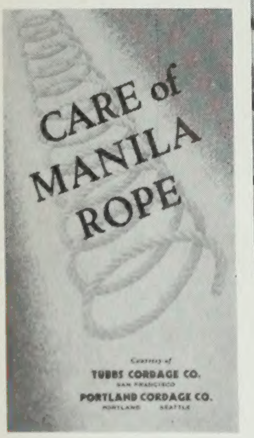

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Pacific MARINE REVIEW

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Official Organ

Pacific American Steamship Association

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Shipowners Association of the Pacific Coast

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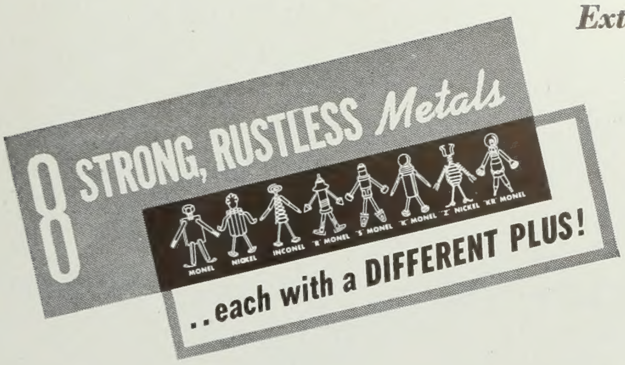

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		Cold-drawn	115	90	20	200	85
		Cold-rolled, hard-temper	135	110	5	260	

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Pacific
MARINE
REVIEW

Editorial Comment

America at War

America is at war.

Together with almost two-score nations, she has devoted all her man-power and all her resources to the grim business of modern mechanized war against the world's aggressors—the Nazi horde.

Whatever we may have thought, or still think, about the kindly Germans, the sunny Italians, or the very polite Nipponese, they are now all Nazis—Germanazis, Japanazis and Italinazis—unanimously bent on the enslavement of all men to the Nazi ideology and collectively destined to destroy themselves against the combined might of an aroused world.

Assuming that every individual in these three nations is entirely imbued with the Nazi idea, they would have less than 10 per cent of the world's population and they do not control more than 10 per cent of world resources.

They do have a certain type of fanaticism which makes them very savage fighters, and they have been preparing modern mechanisms for this war during the past ten years, so that they have made amazing initial success. Because of this success, the war is going to be long and costly, but, of the ultimate outcome, there can be no doubt.

No man should count the cost in money. Any money that is spent in the United States or elsewhere in preparation and prosecution of war is still here circulating after the war is over. The cost of war is in the human and the material values destroyed by war. We are now to produce as never before—farms, factories, shipyards, munition plants, every element of production working day and night, seven days a week, not for profitable use, but for destruction. The loss of young life, of natural resources will be almost incalculable.

Under such conditions, it is very necessary that the morale of the civilian population be maintained at a high level.

In our constitutional democracy, it is inevitable that many mistakes will be made and that we the people will hear much disturbing and disquieting news. Public morale must offset these effects so that confidence and efficient effectiveness can be maintained.

Quietness and Confidence

Some three thousand years ago when the great totalitarian conqueror Nebuchadnezzar was enslaving all the peoples bordering on his Assyrian kingdom, the Hebrew prophet Isaiah caught a "word from the Lord," which has been of great help to millions of souls down through the centuries.

> "In quietness and confidence shall be your strength."

We were reminded of this on reading the following release from the Office of Public Relations 12th Naval District:

"Silence is the order of the day in the U. S. Navy, as well as the greatest virtue in all the armed forces of the united allied nations. Cryptically, the Navy warns its own personnel:

> 'Loose words may lose ships!'
> 'Remember—but don't repeat!'
> 'Keep your safety belt on—your mouth!'
> 'Careless talk may have careful listeners!'
> 'Why did he want to know that?'
> 'Words are like razors—they may cut your throat!'
> 'Save your breath, you'll need it sometime.'
> 'Don't use the telephone for secrets.'
> 'Don't ever talk about your work when off duty.'

"To the American public, the Navy adds several apt phrases for added safety:

> 'Speak fitly or be silently wise.'
>
> 'Be careful of what you say and where you say it.'
>
> 'The idle tongue carries death in its wag.'
>
> 'A secret is a weapon and a friend.'
>
> 'The unspoken word rarely does any harm.'
>
> 'Silence today means safety tomorrow.'
>
> 'Report suspicious actions.'
>
> 'Much tongue and much judgment are seldom together.' "

Quietness of the tongue and of the spirit combined with:

Confidence in the rightness of our cause—

Confidence in the justice of God—

Confidence in our industrial capacity—

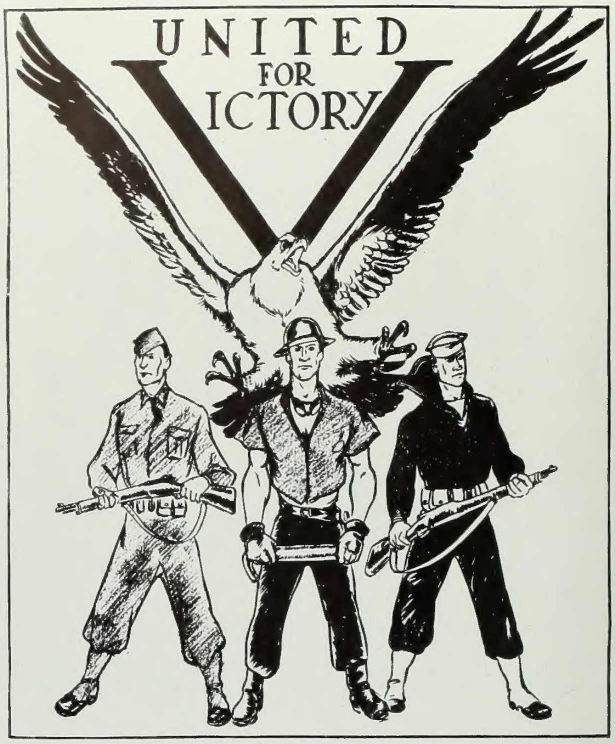
Confidence in the ability of our leaders—

Confidence in the integrity of our allies—

All these spell MORALE in capital letters—spell VICTORY in letters of light.

The American Shipbuilding Status

America is very fortunate in connection with this war that her merchant shipping and her shipbuilding plant are in better condition to tackle the job than at any previous war entry in her history. As we go into this war, our available American-flag tonnage is many times that existing in April, 1917, and our present shipyard capacity is at least a year ahead of the comparable status of that industry in the last World War.



THE ABOVE CARTOON, reproduced from the "Calship Log," house organ of the California Shipbuilding Corporation, speaks eloquently of the attitude of American labor

This condition is due to the foresight and perseverance of the United States Maritime Commission with the hearty backing of a maritime-minded President.

We have just received a release from the National Council of American Shipbuilders, showing some very cheerful statistics on the status of the American shipbuilding effort. During 1941, they record the following increases in capacity:

Shipbuilding ways for vessels 300′ long or more, from 170 to 406;

Shipyards, from 45 to 65;

Shipyard workers, from 240,700 to 537,000;

Launchings, from 25 in the first quarter to 69 in the fourth quarter;

Contracts and allocations, from approximately $3,000,000,000 to almost $7,000,000,000.

These figures include all merchant ships 1000 tons gross or over, and all naval vessels from submarines to battleships. The figures for launchings do not show the complete picture because the great acceleration in launchings is just beginning. In December, 1941, the total shipbuilding plant of the United States averaged better than one launching a day, and the new "Liberty" shipyards are just coming into the picture. If the material, machinery and equipment are kept flowing into these yards on time, there is every reason to predict that an average of more than two ships launched a day will be reached before July 1, 1942.

Repair and conversion work in the shipyards was very heavy in 1941. Over 100 commercial vessels were converted for military and navy use, and a large amount of repair and reconditioning work was done for foreign account under the Lease-Lend Act. This was all additional to the routine and emergency repairs for the commercial merchant marine.

An all-out war on many transoceanic fronts calls for ships in great numbers and of many types. How fortunate that we have them all in production, with the paper work done, and the priorities and allotments of materials, machinery and equipment arranged and functioning.

And remembering this, let us give credit to the United States Maritime Commission and to the staffs and personnel of the shipyards and Navy yards, whose tremendous labors and persevering foresight have given us this great initial advantage.

Barge Building Bids

The legislators who have been crying collusion because of the small number, or small difference in bidding on steel ships should carefully examine the large number and wide variance of the bids on a little matter of 500 wooden barges wanted by the U. S. Maritime Commission for use on inland waters.

Specifications called for barges to be 60 feet by 18 feet by 5 feet, with a capacity to carry 99 tons. They were to be delivered at New Orleans or Mobile, through a period beginning 30 days (first barge) and 110 days (last barge) from date of contract.

Twenty-three yards submitted bids. Lowest bid was from Gray's Harbor Shipbuilding Co., Aberdeen, Washington, for 100 barges at $2,410 per barge, but specifying delivery at Aberdeen. Highest was from Gulf Marine Ways, Inc., at Galveston, Texas, for 50 barges at $13,300 per barge, delivery at New Orleans.

Two bids were in the $3000 to $4000 range; eight were in the $4000 to $5000 range; four ranged from $5000 to $6000; four from $6000 to $7000; three from $7000 to $8000, one was $8072 per barge; and one $13,300.

Both Pacific Coast bidders, Everett Marine Ways, Inc., and Gray's Harbor Shipbuilding Co., specified delivery at their home yard. It is obvious that the 30-day time limit on Barge No. 1 would be almost wholly utilized in towing a barge or barges from State of Washington to New Orleans.

New Law Affecting Marine Radio Officers

by Rear Admiral S. C. Hooper, U. S. Navy

Public Law 351, 77th Congress, enacted December 17, 1941, prohibits the sailing of any vessel of United States registry on any particular voyage, route, or in a specified area if the Secretary of the Navy has notified the master of the vessel that the radio operator is not approved.

This Act was the result of lengthy hearings in Congress, during which it was pointed out that the radio operator of a vessel occupies a unique position of trust and, if subversive, may easily and secretly communicate valuable information to an enemy, which may endanger the security of the vessel, a convoy, or even the fleet in secret passage. Also, it is necessary that radio operators, although not disloyal, be highly qualified, especially if the ship is on a special mission.

Many letters had been received from loyal radio operators in the merchant marine stating their apprehensions concerning the loyalty of certain other operators. All of these loyal men have contributed to safeguarding the merchant marine during the war. The Navy is well aware of the fact that the vast majority of radio officers and operators are 100 per cent loyal, and will be pleased to learn of the passage of the new statute. They realize it is to help safeguard their country, their ships, and their shipmates.

And they realize that this new law will help them to weed out of their organizations the small but strong minority of disloyal workers, and give them organizations in which they can take just pride, from every angle.

The Navy Department has provided a five-man board to study the records of the radio personnel and to recommend elimination in doubtful cases. This Board comprises representatives from the Navy, Coast Guard and Maritime Commission. There has been established also, an examining board in each naval district before which an operator who has been removed under this Act may appear in his own behalf, with assurance that his side of the story will be relayed to the reviewing board in Washington.

"V"ictory Program U. S. Maritime Commission

by Rear Admiral Emory S. Land

Chairman, U. S. Maritime Commission

America's entry into war with the Axis powers, following Japan's attacks in the Pacific and the declaration of a state of war by Germany and Italy, finds this nation, as 1941 nears its close, in the most advantageous maritime preparedness position in its history. As the result of progressive and farsighted steps taken by the Congress and the President since 1936 in the development of the nation's shipbuilding and shipping industries, the United States had laid a groundwork for its defense and war programs which has placed it far ahead of the position it occupied in any previous crisis.

The Nation's Maritime Program

As shown by the Commission's records, this is the status of the nation's maritime program:

Private shipyards capable of building 400-foot or larger ocean-going merchant vessels have been expanded from 10, with 46 ways in 1937, to 40, with 275 ways, an increase of approximately 500 per cent in production capacity, not including that on the Great Lakes.

Authorization and appropriations have been made covering construction and delivery into service of more than 1400 ocean-going cargo vessels, in addition to about 150 accessory ships of other types, by the end of 1943, involving an estimated total investment of approximately $3,000,000,000.

Approximately 1000 of these ships are under construction or contract, the remainder to be ordered as rapidly as propulsion equipment becomes available.

As an auxiliary to the armed forces, the Maritime Commission to date has acquired and turned over to the Navy and the Army approximately 175 major ships aggregating about 1,250,000 gross tons, in addition to many smaller craft.

All of the 198 ships remaining in the first World War laid-up fleet and turned over to the Commission in 1937 have been utilized and most of them have been returned to service, either through sale or charter after reconditioning.

Approximately 80 merchant ships of foreign registry, laid up in United States ports, have been requisitioned and placed in service, many having been reconditioned.

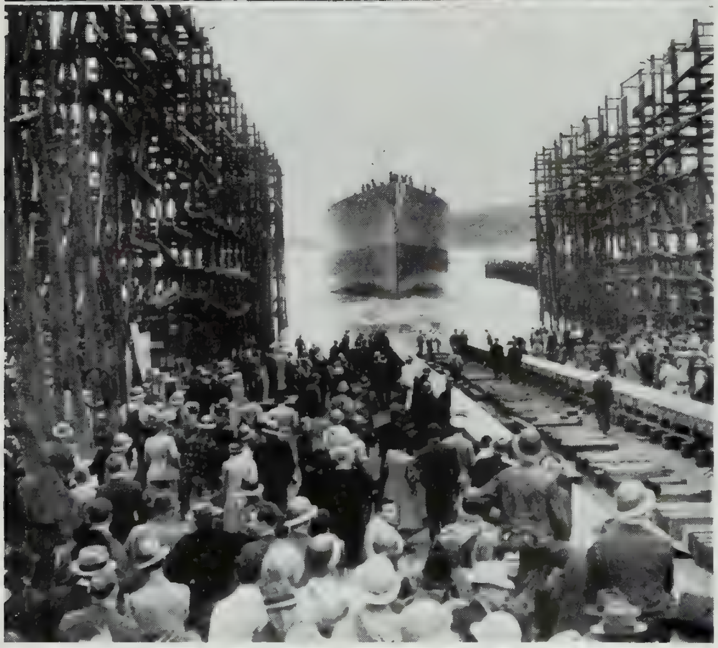
In cooperation with the Commission, shipyards on all coasts of the nation have established training schools for shipbuilders to meet the peak requirement of 600,000 to 700,000 men by late in 1942. Ordi-

IN WAR, battleships are very important, but in a world war with many transoceanic fronts, cargo and transport vessels are equally important

FIRST VESSEL ordered by the Maritime Commission was the crack passenger liner America, largest commercial vessel ever built in an American shipyard. She is shown above, at the outfitting dock of the Newport News Shipbuilding and Dry Dock Co., illuminated at night when they were rushing her through to completion

Below: The same ship, now the U. S. Army transport West Point, is shown in her gray war paint. The change is symbolic of the grim determination of America in entering this war

RICHMOND SHIPBUILDING CORP.
10,500 TONS
United States Maritime Commission
No 41
SHIPWAY No 5
LAID SEPT 17 1941
12
34



Launchings

Launchings are being recorded in ever increasing tempo on all our coasts. While speed in launching does not always mean speed in delivery, it is the popular mile-stone in the building of a ship.

Throughout our shipyards today, keel layings follow launchings so fast that the hull is scarcely in the water before workmen are getting ready to lay new keel blocks.

We show here two typical launchings, one on Puget Sound, the other in Southern California.

narily, there have been less than 100,000 skilled men thus employed.

Training facilities of the Maritime Service have been more than doubled to supply men for the ships of the expanded Merchant Marine. It is estimated that 6300 licensed officers and 25,000 trained seamen will be available from that source by the end of 1943—about two-thirds of the additional number that will be required.

Establishment of a Division of Emergency Shipping to direct, expedite and coordinate operations of the nation's merchant marine tonnage has resulted in marked acceleration of defense materials importation and shipment of war aid to the democracies.

Steps in Development

The steps taken to place the maritime program in its advanced stage began with the passage of the Merchant Marine Act of 1936 and the creation of the Maritime Commission; approval by the Congress and the President in 1937 of the Commission's long-range program of 500 ships in 10 years, and subsequent authorizations in 1940 and 1941 of expansion of the shipbuilding program, under defense emergency and lease-lend legislation.

TO THE OUTFITTING DOCKS

Before the launched hull has stopped moving, tugs are hooking on to tow it to the outfitting dock, where superstructure, equipment and finishing touches are in order. One Pacific Coast yard is fixing up to meet the hull at the outfitting dock with large units of the superstructure completely equipped, ready to be welded in place on the deck structure

TRIALS of these new ships are hardly over before they find themselves at some commercial or Army or Navy dock, loading to the Plimsoll mark with food or construction material, tanks or other mechanized armament, ammunition, or some strategic and necessary cargo. Time is of the essence—speed is the watchword

As a result of that congressional and administration policy, the nation was not caught flat-footed when war came and the shipbuilding industry is many months ahead of its effort in the first World War. The ship-a-day stage in launchings was reached in December. During the first quarter of 1942, the Commission's schedule calls for the laying of 148 keels, launching of 125 ships and the delivery of 71 completed vessels. The second quarter of the year should bring the program to the two-ships-a-day stage, and constantly increasing tempo, it is expected, will, if labor produces, result in the delivery into service of an average of two ships a day throughout 1942 and 1943, a total of about 13,500,000 deadweight tons.

New Shipbuilding Technique

Because of the adoption of welding in the place of riveting in the major part of the shipbuilding operation, and utilization of a type of mass-production method adapted from the automobile industry, these new merchant ships in the emergency program are being delivered into service in from 4½ to 6 months after keel-laying, approximately one-half the time it took to build them in 1918 to 1922.

(Page 63, please)

U. S. M. C.

Pacific Coast Inspection Force

DAVID W. CURRIER
Chief Inspector Pacific Coast

Coordinating Inspectors

for the

Pacific Coast

HARRY B. TAYLOR
Machinery Inspection Coordinator

ERVING Z. HUMPHREY
Hull Inspection Coordinator

MONROE W. JACKSON
Electrical Inspection Coordinator

↑ INSPECTION FORCE AT MOORE DRY DOCK CO.

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◆

INSPECTION FORCE AT RICHMOND SHIPBUILDING CORP.

↓ Left to right—Front row: John Daly; Chas. Gallagher, Welding Inspector; George Cleary; Hollis Hughes; Alfred Fenton, Shipyard Inspector (hull); Harry Levy, Shipyard Inspector (hull); Harry Kelly, Shipyard Inspector (machinery); Floyd Mangus. Second row: Wm. Anderson, Senior Hull Inspector; Harold Ralph, clerk; Thomas Carter, clerk; Hugh Carr; Earle Horne; Arthur Nield. Back row: David Robertson; Wm. Hasonfuss, Senior Machinery Inspector; Adolph Thompsen, Senior Electrical Inspector; Wm. E. Russell, Principal Machinery Inspector; Chas. E. Stewart, Principal Hull Inspector; David Stewart, Jr.

INSPECTORS AT CALIFORNIA SHIPBUILDING CORPORATION

↑ Left to right, first row: John Hoogerwerf, Hull Inspector; Jas. Stewart, Principal Hull Inspector; J. M. Corrie, Hull Inspector; Geo. Fenton, Senior Hull Inspector; N. M. Gaskill, Machinery Inspector. Second row: R. L. Westmorland, Hull Inspector; L. J. Smeaton, Hull Inspector; Geo. F. Staub, Principal Machinery Inspector; E. G. Bergstrom. Third row: Prescott Smith, Hull Inspector; E. Z. Humphrey; Alex Bataiff, Senior Clerk. Last row: H. Stern, Machinery Inspector; B. L. Davies, Senior Inspector; John L. Walker, Clerk; J. J. Camby, Administrative Assistant

●

INSPECTORS AT WESTERN PIPE AND STEEL COMPANY

↓ First row (left to right): Eustace Bauer, George Jones, Wm. H. Griffin, Wm. P. Manuell, Wm. Paine, David Jones. Last row: Eugene Knowles, Walter Norin, Herman Quarg, Leslie Lewis, Wm. McKenzie, George Downie, Alfred Bunker, Wm. Dwyer

INSPECTORS AT SEATTLE-TACOMA SHIPBUILDING CORP.

Left to right: James M. Craig, Senior Hull Inspector; Edward A. Mortensen, Hull Inspector; Allen T. Banfield, Assistant Clerk-Stenographer; James W. Hare, Senior Electrical Inspector; Paul N. Mulvany, Principal Machinery Inspector; Russell H. Fuller, Hull Inspector Trainee; David Neilson, Principal Hull Inspector; Robert E. Bishop, Assistant Clerk-Stenographer; Lloyd C. Karlson, Hull Inspector; William S. Barr, Assistant Machinery Inspector

◆

INSPECTORS AT OREGON SHIPBUILDING CORPORATION

Left to right: Thomas S. Lydon, Shipyard Inspector (hull); Peter J. Thrall, Shipyard Inspector (hull); Herbert A. Brown, Junior Hull Assistant; Albert Johnson, Shipyard Inspector (outfitting); Jack Lukanovic, Assistant Hull Inspector; Earl W. Bateman, Assistant Hull Inspector; W. J. Muirhead, Acting Senior Hull Inspector; W. S. Smith, Principal Hull Inspector; H. P. Stevens, Principal Machinery Inspector; Wm. A. Correia, Senior Machinery Inspector; Albert J. Frasier, Acting Senior Machinery Inspector; Edward D. Ring, Associate Machinery Inspector! Henry N. Hottendorf, Shipyard Inspector (machinery); Chester L. Owen, Shipyard Inspector (machinery); Hal Kleid, Assistant Machinery Inspector; Peter Muntz, Shipyard Inspector (machinery); James N. Dunn, Assistant Machinery Inspector

INSPECTION FORCE AT CONSOLIDATED STEEL CORPORATION SHIPYARD, LOS ANGELES

Left to right: R. Harper, Principal Electrical Inspector; D. P. Nilan, Machinery Inspector; W. R. Boyd, Principal Hull Inspector; Jess Hanson, Senior Machinery Inspector; T. W. Mearns, Principal Machinery Inspector; Carl Long, Machinery Inspector; J. A. George, Senior Machinery Inspector; and John Delaney, Hull Inspector

Expansion of shipyards through authorization by the Commission and financial participation by the Government has resulted in addition of 131 ways, not including those installed by private yards without Government assistance. Nine entirely new major shipyards have been created and the shipbuilding industry again has been extended to all coasts of the nation. There has not been the concentration that resulted from the expansion in the first World War, however, and the nation's shipyards today are so located as to tap many available supplies of labor and industrial capacity, as well as to prevent extreme congestion of housing and transportation facilities.

The Emergency Ships

When it became apparent late in 1940 that the United States must become the backlog of supply for the nations battling the Axis powers, the nation's supreme shipbuilding effort was pyramided early last year on the original 500-ship, long-range plan. Contracts for seven new yards with 51 ways were made by February, 1941, and contracts for the first 200 "Liberty Ships"—emergency cargo vessels—were made by March 15. Keels of 116 of those ships have been laid; 32 have been launched; and the first three are ready for delivery into service.

In addition, the long-range program of standard Maritime Commission design vessels has been expedited to the point where approximately 200 keels of these modern efficient and high-speed ships have been laid, of which 150 have been launched to date and 125 delivered into service. The original schedule of 50 ships a year, therefore, has been increased to approximately 100 ships a year of these designs. They will go into service even faster during the next two years.

To further expedite the shipbuilding program, the Commission on May 1, in accordance with instructions by President Roosevelt, speeded up production in the shipyards by ordering a six-day, 48-hour week on at least a two-shift basis to supplant the five-day, 40-hour week, which had prevailed up to that time.

Tanker Construction

One example of war-time preparedness in the maritime program can be found in the construction in 1939 and 1940 of 12 high-speed tankers under cooperative agreement between the Standard Oil Company of New Jersey and the Commission. Under this agreement, the company paid the construction costs of the tankers and the Commission paid for additional defense features, costing $880,000 per ship. Today, those 12 tankers are valuable auxiliary vessels in the United States Navy, as is the first ship ordered under the Commission's long-range program, the America, largest passenger liner ever built in the United States.

Training of Personnel

In expansion of its training program to supply officers and men to operate America's greatest merchant marine, the maritime service, which is operated jointly by the Maritime Commission and the United States Coast Guard, has added two new training schools this year, one at St. Petersburg, Florida, and the other at Port Hueneme, California. In addition, the fleet of training ships utilized in this service has been expanded to 18. The Commission's Training Division is assisted by the Federal Employment Service in obtaining properly qualified young men for training.

Right now, we have insufficient ships for our national defense needs. But as rapidly as the new merchant ships in ever-increasing number are ready for service, and properly trained men are available to man them, they will be put in operation to replace tonnage which has been taken from our Merchant Marine to aid the democracies in their war effort, and to expand America's fleet of merchant ships to the full requirement of our nation's maritime commerce, both during the war and in the post-war period.

The Long-Range Goal

It is a definite part of the Maritime Commission's long-range plan to provide for this nation a post-war merchant marine which will assure us of a dominant place in world commerce. To do that, it is necessary for us to have the ships capable of carrying at least 50 per cent of this nation's world trade.

Pacific Coast

SHIPBUILDING

287 Vessels of 2 MILLION GROSS TONS

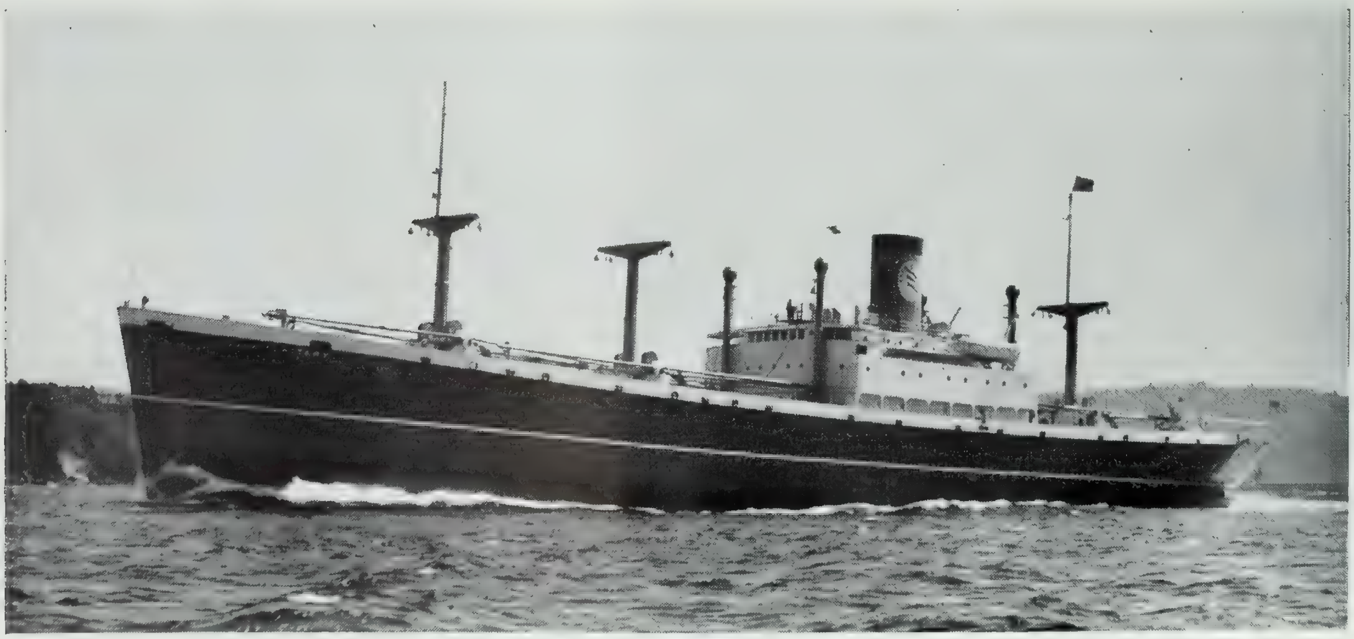
The year 1941 has witnessed a tremendous development of shipbuilding activity on the Pacific Coast. That this development will now be accelerated into an all-out wartime tempo is already being amply demonstrated.

Pacific Marine Review, in planning this Blue Ribbon Edition, has decided to cover in great detail this growth of West Coast shipbuilding, particularly as it came under the control of the U. S. Maritime Commission. However, just as we were getting ready to prepare our text matter for this issue, came the treacherous Japanese surprise attack on Pearl Harbor and other American-Pacific island outposts.

This war condition on the Pacific Ocean makes the Pacific Coast a defensive and offensive front line of continental United States, and, consequently, the proper censorship is being applied to all news of events that have any bearing on military matters. Shipbuilding development, therefore, can be described only in the most general terms, and without reference to specific locations of yards or ships, or important shops.

We desire to cooperate to the fullest extent with Navy, Army and Maritime Commission officials in so developing our text matter and illustrations that they shall contain nothing that will be of "aid or comfort to the enemy," and yet shall include everything that will uphold and increase the morale and enthusiasm of our fighting forces at sea, in the field, in the shops and in the yards.

Under these restrictions, and urged on by this impulse, we are glad to be able to give a heartening picture of the Pacific Coast merchant shipbuilding effort of the United States Maritime Commission.



A PACIFIC COAST BUILT C-1-B. Ten motorships and seven steamers of this type were delivered by Pacific Coast yards in 1941

PROGRAM OF U. S. MARITIME COMMISSION

We are confining this treatment to the Pacific Coast yards and to the merchant vessel construction, because the total shipbuilding effort on the Pacific Coast, or the merchant shipbuilding effort of the nation, are both much too large for adequate treatment in a single issue. However, the general description of new shipbuilding plant and technique contained herein applies to all new shipyards everywhere in the United States. The total Maritime Commission effort is given very clearly and in terse naval fashion by Admiral Land's article in this issue.

Growth in 1941

On January 1, 1941, there were five shipyards working on the Pacific Coast shipbuilding program of the U. S. Maritime Commission. These yards held contracts for 36 ships with an aggregate gross tonnage of 268,700. For this building program, these yards had 8½ building ways actually in operation. The details of this program are shown in Table I.

The fraction appearing in the number of shipbuilding ways above will probably raise questions in the minds of many readers. This is the explanation. When the Consolidated Steel Corporation of Los Angeles decided to enter the shipbuilding industry, they rented a portion of the Long Beach Shipbuilding Company plant at Long Beach, California. This yard has a considerable frontage on the channel forming Long Beach inner harbor, and on that frontage has a long sloping concrete ramp arranged for the erection of hulls with their longitudinal axis parallel to the water edge of the ramps, and for sidewise launching.

The length of this ramp that was leased to Consolidated was sufficient to

U. S. MARITIME COMMISSION SHIPBUILDING PROGRAM ON THE PACIFIC COAST

YARD	LOCATION	SHIPS	TOTAL GROSS
Birchfield Boiler Works	Tacoma	6 tugs	6,000 tons
California Shipbuilding Corporation	Los Angeles	55 EC-2	374,000 tons
Consolidated Steel Corporation	Los Angeles	33 C-1-B 2 transports	224,000 tons
Moore Dry Dock Company	Oakland	29 C-2	215,700 tons
Oregon Shipbuilding Corporation	Portland, Ore.	44 EC-2	299,200 tons
Pacific bridge Company	Alameda	9 coasters	16,740 tons
Richmond Shipbuilding Corporation	Richmond	50 EC-2	340,000 tons
Seattle-Tacoma Shipbuilding Corporation	Tacoma	36 C-3	320,400 tons
Western Pipe & Steel Company	San Francisco	23 C-3	204,700 tons
Totals		287 ships	2,000,740 tons

As of December 1, 1941, and not included in the above, there had been delivered to the Maritime Commission by Pacific Coast shipbuilders the following 21 seagoing vessels:

Moore Dry Dock Company	4 C-3	Seattle-Tacoma Shipbuilding Corp.	5 C-1-B
Bethlehem Steel Company	5 C-1-B	Western Pipe & Steel Company	5 C-1-B
Consolidated Steel Corporation	2 C-1-B		

A TYPICAL SCENE in a Pacific Coast "Liberty" shipyard. The hull on the ways ready for launching and a large number of prefabricated parts for another hull waiting to take their place on the ways

accommodate 1½ hulls being erected thereon. So we count this ramp as 1½ shipbuilding ways.

Early in 1941, one of these five yards, the San Francisco yard of Bethlehem Steel Co., completed its quota of Maritime Commission contracts, and has since been devoted entirely to naval construction.

During 1941, the total delivery from Pacific Coast yards to the Maritime Commission was 23 ships with an aggregate gross measurement of approximately 158,000 tons. This delivery record is 36 per cent of the total American shipyard deliveries to the Maritime Commission in that year.

On January 1, 1942, there were ten yards with a total of 52½ shipbuilding ways working on this Pacific Coast program, and having allotments and contracts aggregating 265 vessels, with a total gross measurement of approximately 1,850,000 tons.

Expressed in rough percentages, these statistics indicate for the Maritime Commission Pacific Coast Program, 1941 growths of: 100 per cent in number of shipyards; 600 per cent in number of shipbuilding ways; and 1150 per cent in number of ships building and under contract. For a twelvemonth growth, these figures are almost staggering.

Under the pressure of such expansion, new shipyards have been built in record time and have produced ships while the yards were still in process of construction.

HERE WE HAVE an artist's conception of the EC-2, the "Liberty Ship"—149 of which are presently allotted to three Pacific Coast yards

These figures are exclusive of the 1941 deliveries, and it would therefore appear that the present program of ship construction for the Maritime Commission in Pacific Coast yards calls for delivery of large seagoing steel vessels at the approximate average rate of three every week for the calendar years 1942 and 1943.

Judged on their present records, we can state positively that the Pacific Coast yards can easily beat this schedule if they are supplied with the necessary material, equipment and machinery to finish the vessels.

The New Shipyards

Of the Pacific Coast total program outlined above, some 135 ships with an aggregate gross measurement of 918,000 tons, are of the "Liberty" EC-2 type. These are all being built in three shipyards, as follows:

55 vessels at California Shipbuilding Corporation, Los Angeles, Calif.
44 vessels at Oregon Shipbuilding Corporation, Portland, Ore.
36 vessels at Richmond Shipbuilding Corporation, Richmond, Calif.

These three yards, together with the Todd-California Shipbuilding Corporation yard at Richmond and the yards of the Seattle-Tacoma Shipbuilding Corp. at Tacoma and Seattle, were all

A "LIBERTY" HULL, just launched, is pushed up to the outfitting dock. This first hull at the Richmond Shipbuilding Corp. had only 20 defective rivets to replace

THE S. S. MORMACSUN, a C-3 cargo steamer. Four of these have been delivered by the Moore Dry Dock Co. of Oakland, California

built by and are under the management of the Todd-Six Companies shipbuilding partnership.

The three first-mentioned yards were completely financed by the U. S. Maritime Commission and are owned by that body.

In each of these three yards, the shipbuilding corporation is a managing agent for the Maritime Commission. The corporations work on a fixed-fee basis. The Commission calculates the labor cost (man hours) that are considered necessary to build the ship, install her machinery, and equip her ready for sea. If the managing agent can finish the ship with the specified number of man hours labor, he gets the normal stipulated fee. If he can finish the ship with less man hours, he gets a proportionate bonus added to his fee. If the ships take more man hours than specified, his fee is reduced. The bonus is limited to 16 per cent; the penalty may be 50 per cent.

The 149 ships are all identical, simple cargo carriers, of the characteristics shown in the table herewith. They are comfortable, slow, seagoing freighters, ideal for convoy work. Though somewhat lighter in frame and plate than the standard hulls of the Maritime

Launchings

ABOVE: The first of 44 at the Portland yard of the Oregon Shipbuilding Corp. goes into the Willamette River. She was christened Star of Oregon

AT RIGHT: The C-1-B steamer Aguiprince slides sidewise into the Long Beach harbor from the yard of Consolidated Steel Corporation

Commission, they have ample strength for ordinary sea service at their speed and will make good carriers in many of the shorter trades and tramp service.

Principal Characteristics

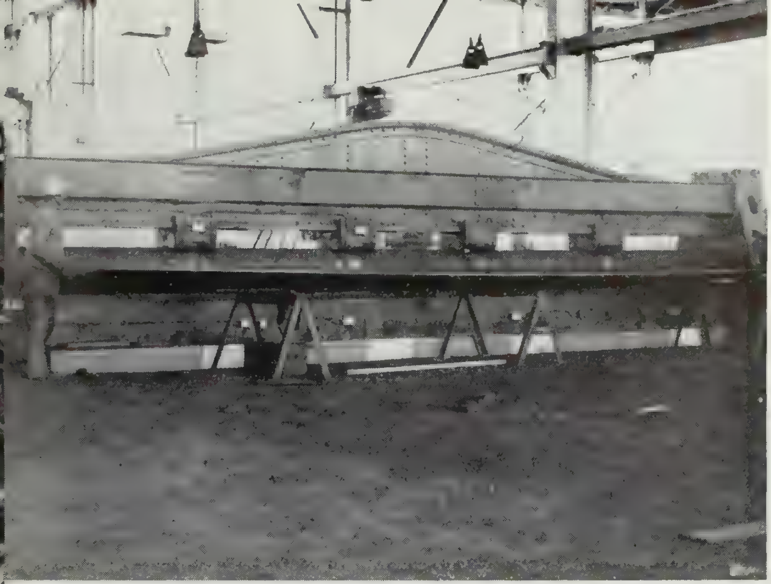
Length overall	441′6″
Length B. P.	417′0″
Beam molded	56′10¾″
Depth molded	37′4″
Draft loaded	27′7″
Displacement	14,100 tons
Cargo deadweight	9,146 tons
Engine capacity	2500 shp
Sea speed	11 knots

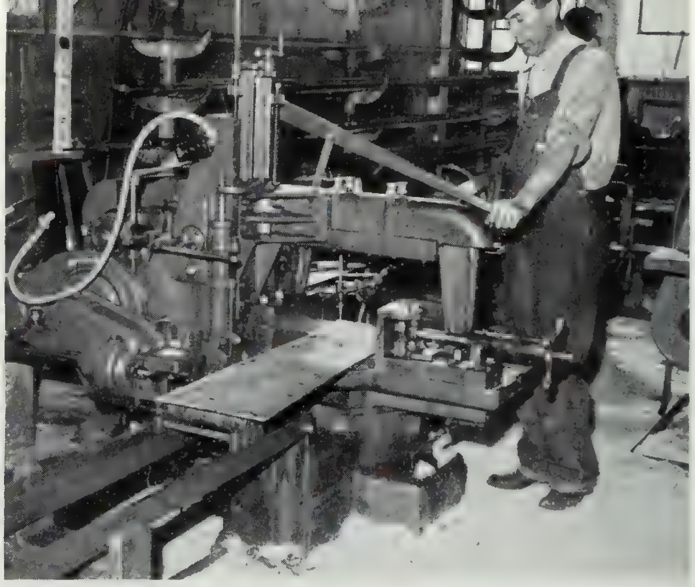
The shipyards were planned especially to take advantage of standardized ship design and of modern shipbuilding technique. The sites were all selected so that a working area of from 50 to 90 acres was available. Ways were arranged with ample space between for crane tracks and the handling of bulky pre-assemblies.

At the head of the ways, welding assembly parks were given an area even greater than that occupied by the ways. On the inshore side of this welding

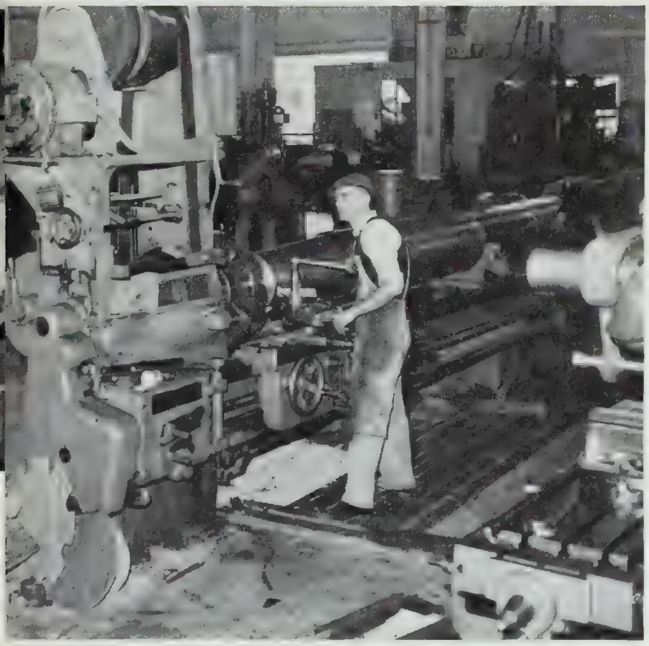
AT RIGHT: The James Otis, first hull out of 50 allotted to Richmond Shipbuilding Corp., slides down the ways at Richmond, Calif., less than four months from keel laying and less than ten months from ground breaking for the yard

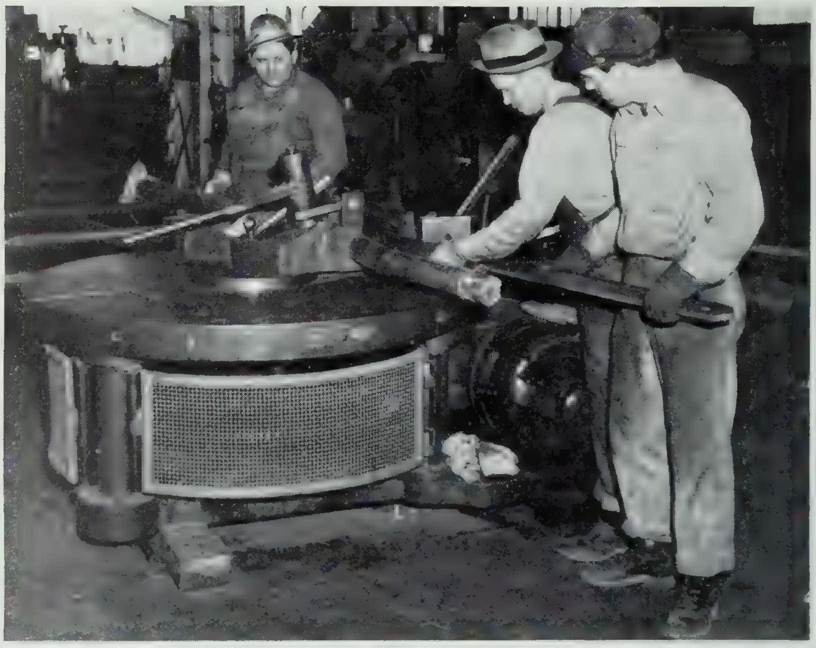
BELOW: The Steel Artisan, C-3, makes a big splash at Western Pipe & Steel Co.'s yard, South San Francisco



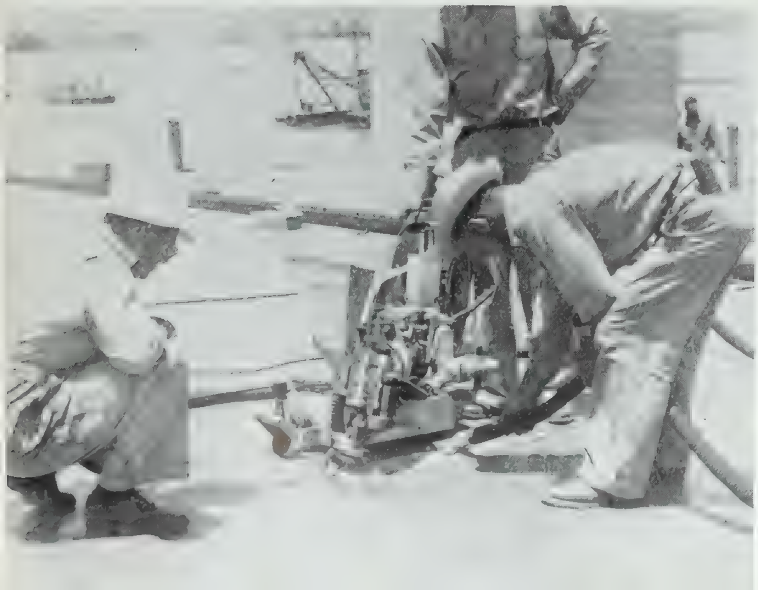


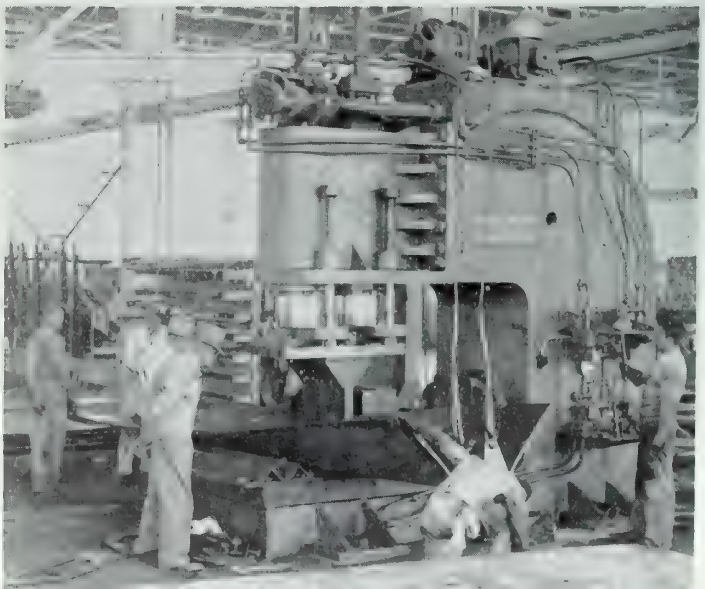
Tools at California Shipbuilding Corp.





UPPER: Large plate bending rolls; and a power saw
CENTER: Lathe finishing propeller shaft; and a pipe-bending machine
LOWER: Union Melt automatic welder; and a large hydraulic press





park, another large area is devoted to racks for storage of fabricated plates and shapes. Across the inshore side of this storage area is erected a large plate shop, arranged in bays.

Each bay in this shop is equipped with machines for fabricating certain types of the steel going into the finished ship. In each bay, the steel travels through in a straight line from the plate and shape storage racks at the inshore side to the fabricated steel racks at the outshore side.

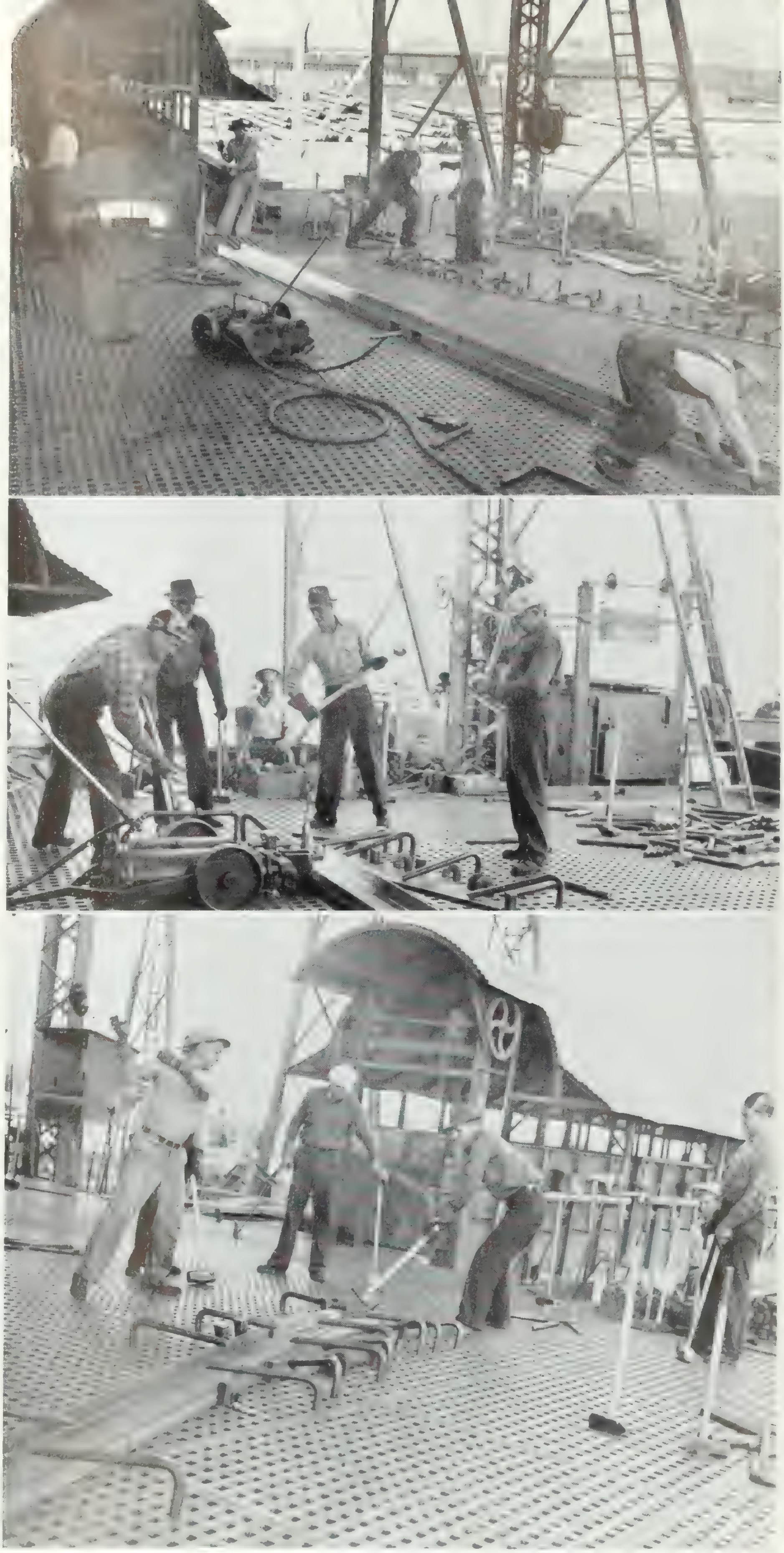
Cranes and crane trackage are provided in great abundance to cover every needed movement of material. Railroad deliveries come right into the yards and are unloaded direct to the plate and shape racks. Heavy machinery comes in by rail or barge.

In each of these yards ample provision is made for outfitting dock and for all the tools and crane equipment necessary for installing machinery and equipment in cargo vessels of the type being built.

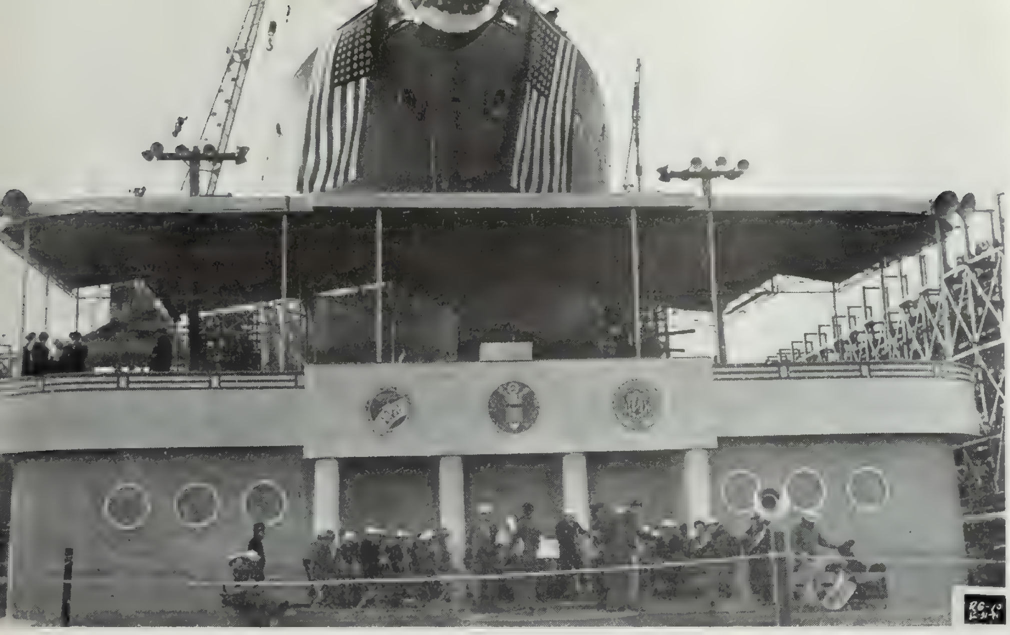
Records for construction of yards and for building of ships are being established and broken about once a week. As of November 1, the latest official figures of the Maritime Commission for all the yards building "Liberty Ships" show the Oregon Shipbuilding Corporation and the California Shipbuilding Corporation to be in first and second place, respectively, with percentage scores of 49.77 and 42.70. They were then well out in the lead, since North Carolina Shipbuilding Corporation, holding third place, had a score of only 30.33 per cent, and the Richmond Shipbuilding Corporation, in fifth place, had 27.40 per cent.

This percentage scoring is based on the production attainment of each yard as related to the number of ways in the yard and is applied comparatively only to the nine yards exclusively building the "Liberty" type steamers. While this is on the press, some other yard may have taken a spurt and gotten ahead of the leaders.

During December: the schedule of the California Shipbuilding Corporation called for launching seven "Liberty Ships"; Oregon Shipbuilding Corporation planned to launch five; and Richmond Shipbuilding Corporation had two launchings dated. This total for the three Pacific Coast yards —14 launchings for December—com-



IN ALL SHIPYARDS it is still necessary to heat and bend heavy framing to the curves of the hull, as shown above, on the bending slab of the Richmond Shipbuilding Corp.



AT THE LAUNCHING of the first ship (James Otis) from the Richmond Shipbuilding Corp. ways, this very elaborate and beautiful platform was used. It is built in sections; can readily be taken apart and moved; holds 200 guests comfortably; is surmounted by a gorgeous blue canvas awning; and is finished in white, gold and blue, the colors of the U. S. Maritime Commission. Another delightful surprise at this launching was the presence of James Otis (right), a retired, prominent San Francisco shipping man, who is the great-grandson of the Revolutionary hero, for whom the vessel was named

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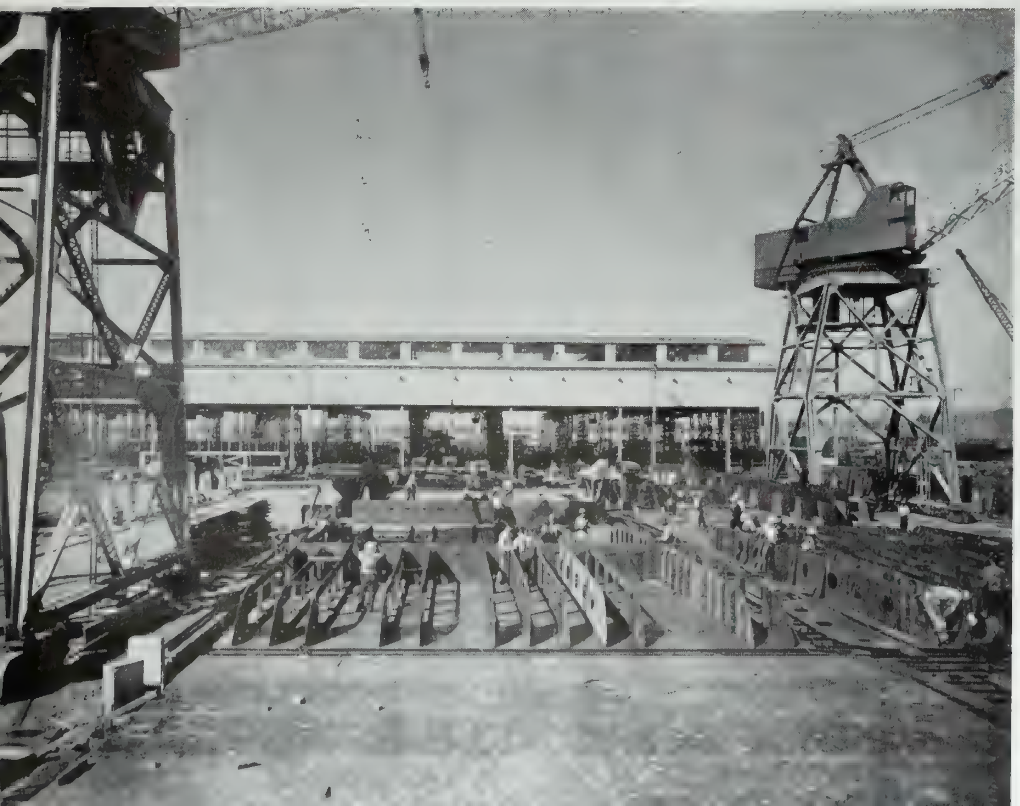
BELOW: A view from the head of one of the ways at Richmond, showing the welding park in the foreground and the plate shop beyond. Note the crane towers which serve the welding park, the ways and the fabricated storage park, lying between plate shop and welding park



pares more than favorably with the national total of 25 from all nine yards.

A New Type of Shop

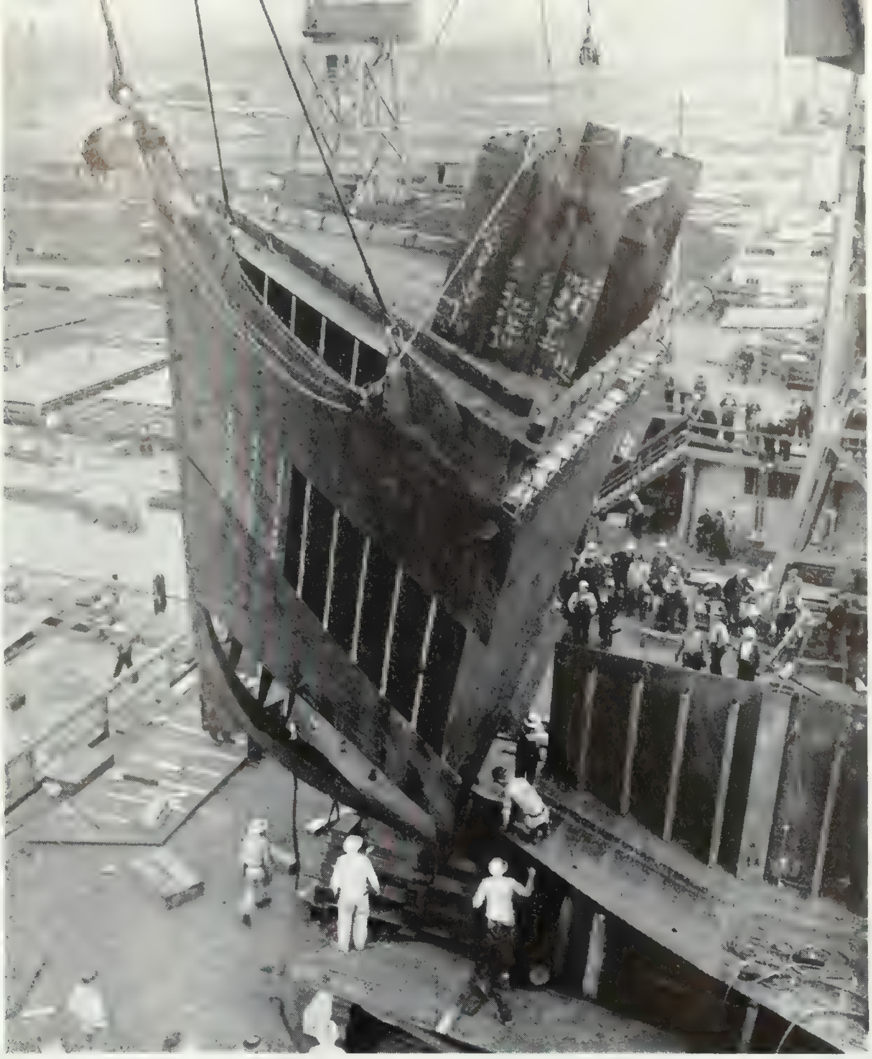
At the Richmond Shipbuilding Corporation, a shop is being erected that will be something new in shipbuilding equipment. This is to be called a preassembly shop. It will be 400 feet by 200 feet, and will be equipped with cranes to handle preassemblies up to 75 tons in weight.

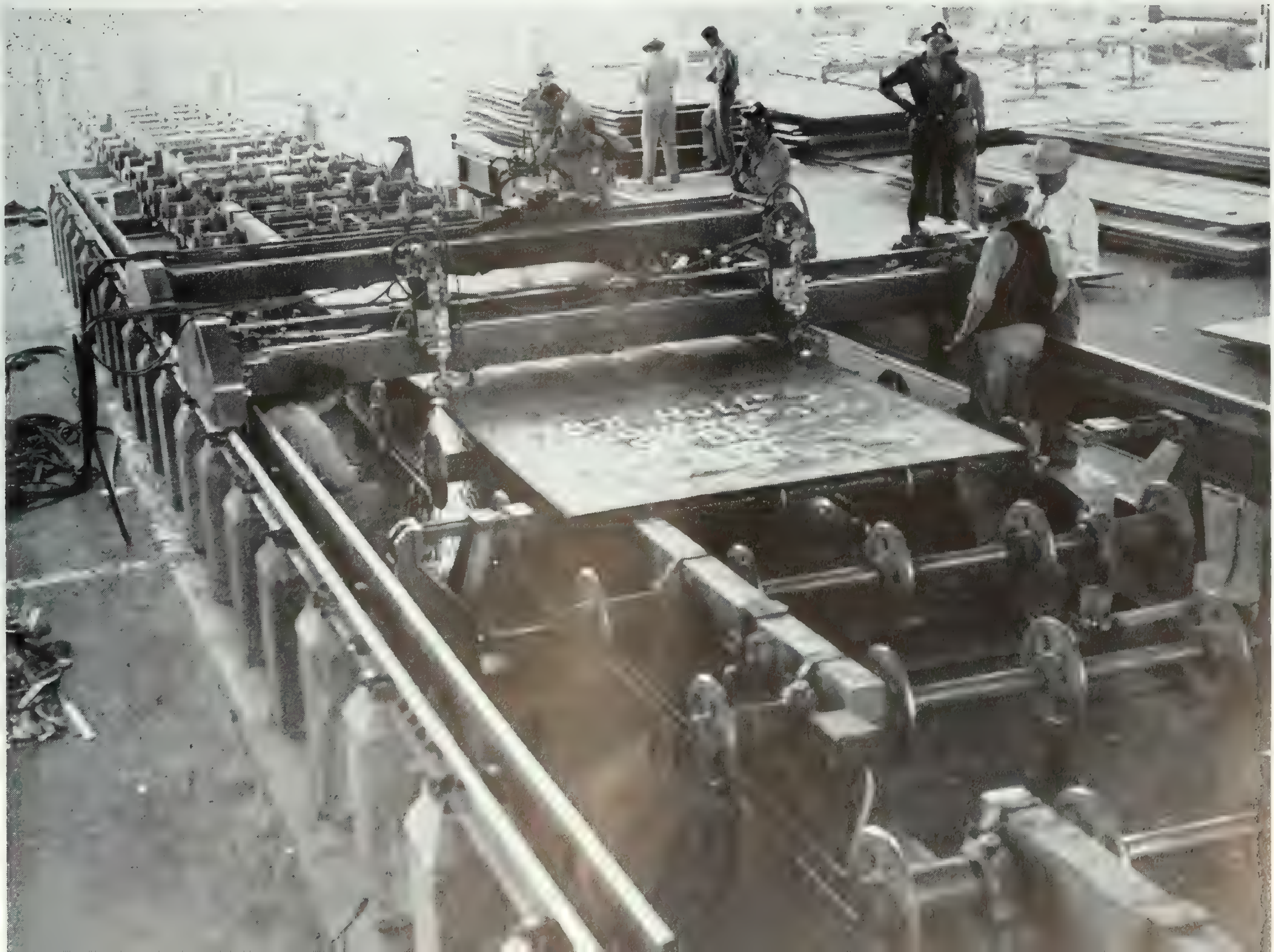
Here large parts of the superstructure of a hull will be prefabricated, assembled by welding, wired, piped, equipped, painted, furnished and attached to the hull as complete units.

This will be a tremendous timesaver in overall construction and outfitting period, and should make the Richmond yard quite unique as a ship assembly plant.

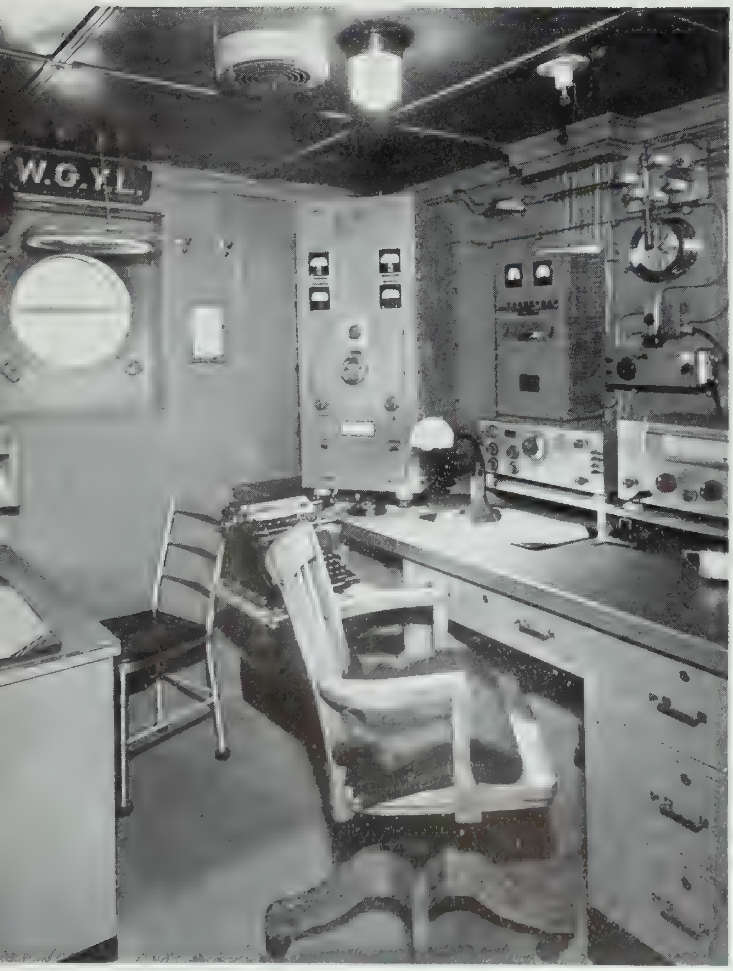
Since the Todd-California Shipbuilding Corporation yard is only a short quarter mile from the Richmond Shipbuilding Corporation, and both are now under practically the same management, it is anticipated that the Maritime Commission will take over Todd-California as soon as the present British contract for 30 "Victory"

MODERN TECHNIQUE in shipbuilding utilizes the most efficient methods for cutting labor time in hull erection. So far as possible, large parts of the hull are pre-assembled in position, where riveting and/or welding can be done to best advantage. At right: Two cranes are swinging the forepeak of a "Liberty" hull into position for fastening onto the structure on the ways. Below: A large flame-cutting machine is planing the edges of a plate





THAT PACIFIC COAST SHIPYARDS turn out well-finished jobs is attested by the Captain's office above, and the radio room, below, both on a C-1 motorship built by Western Pipe & Steel Co.



(synonymous with "Liberty") ships is completed (probably August, 1942). These two plants, operated as one yard, will have 16-18 ways, and these ways, kept full, will justify the prediction that the savings effected by preassembly of superstructures will more than amortize the cost of the new shop and its equipment as well as greatly shorten the keel-laying-to-delivery period.

A New C-1 Yard

Another Maritime Commission financed, Pacific Coast shipbuilding project is the new Consolidated Steel Corporation shipyard at Wilmington. This yard is arranged on much the same plan outlined above for the "Liberty" shipyards. The one very striking difference is the absence of a plate shop. Consolidated Steel has one of the largest and finest steel fabricating plants on the Pacific Coast at Maywood, 12 miles from the shipyard, and all their plate shop work will be done at that plant, following the same procedure they have been using for the past year in connection with their Long Beach yard.

The area that would have been occupied by a plate shop in the normal shipyard is added to the welded assembly racks, which is a great advantage.

Very noticeable in this yard, as in all the new yards, is the tremendous space devoted to parking of automobiles. Practically no effort is made by any public utility to provide additional transportation because of a new industrial plant, no matter how large that plant may be. Every workman comes in his own automobile, or in that of one of his neighbors. Incidentally, if the rubber tire rationing does not take care of these shipyard workers, there is going to be some job laid out for the "bus" and street car systems of the shipbuilding centers.

The new Consolidated Steel Corporation yard is designed especially for building the standard C-1-B design cargo steamer. Its first keel will be laid before this article appears in print. Consolidated has a contract to build 30 of these ships in addition to the four C-1-Bs of their original contract, and the two naval transports, which are now under construction at the Long Beach yard.

An All-Out Effort

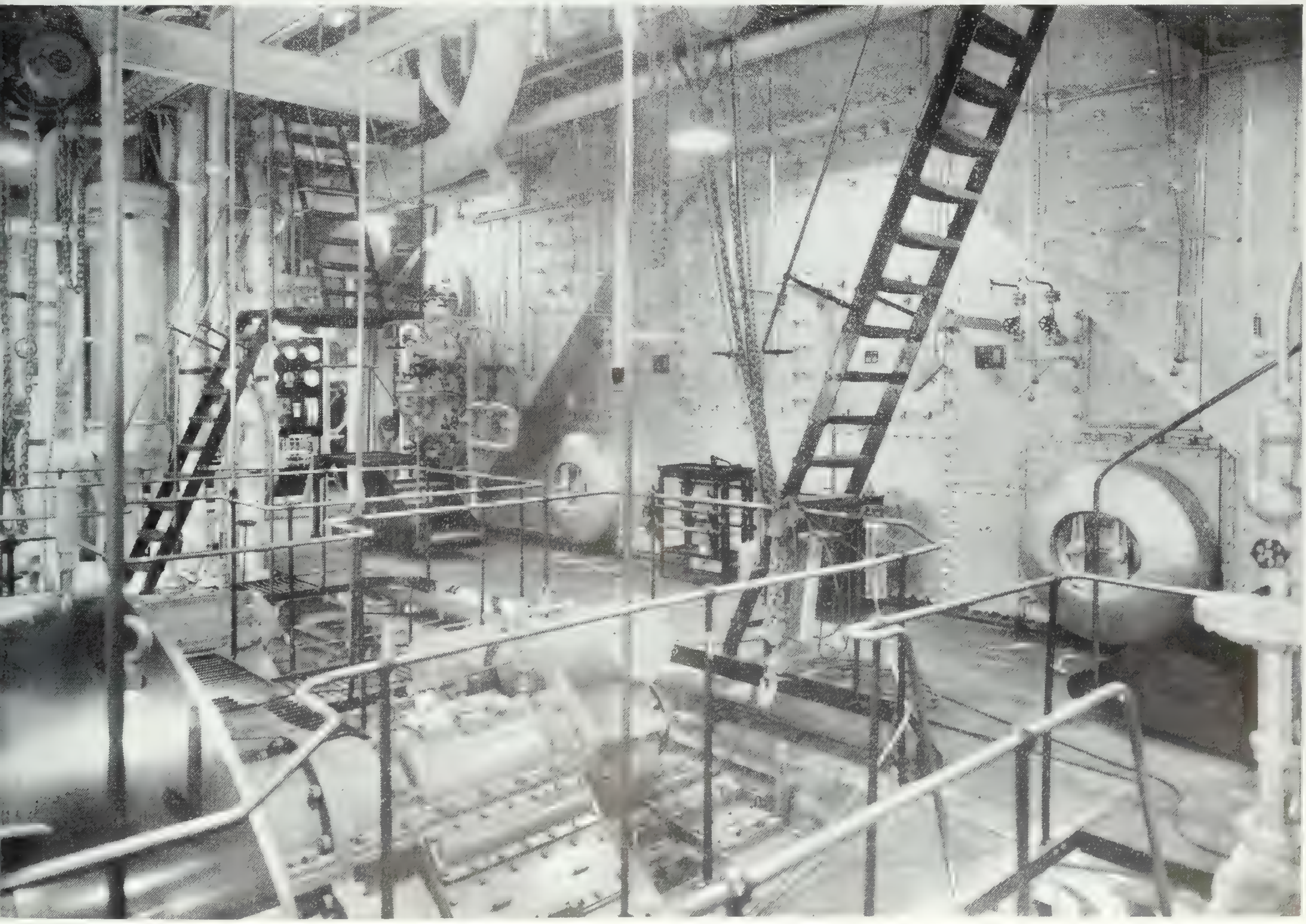
Even before the United States was

forced into war, the "Liberty" shipyards were already on a three-shift, 24-hour basis, and every effort was being made to beat schedules in the production of ships. It is now established, beyond a doubt, that any bottlenecks there may be in the American shipbuilding industry are not in the shipyards. Given a proper flow of material, machinery and equipment, the yards can and will break all records in the shipbuilding fabrication and assembly processes.

The power plants of the standard U. S. Maritime Commission steamers and motorships present some new installation problems. That Pacific Coast marine engineers and machinists have solved these problems is evidenced by the many successful trial trips of 1941.

Our observations in Pacific Coast shipyards, show us that shipyard labor is willing and eager to put all its energies into production in a 100 per cent all-out effort to give the nation ships—better ships, and more ships—for Victory and Liberty.

PACIFIC COAST SHIPYARDS have made notable successes in the installation of the steam and diesel power plants in Maritime Commission ships. Above is shown a combustion control board. Below: The engine room of a C-3 steamer. The turbines are De Laval; the boilers Foster Wheeler

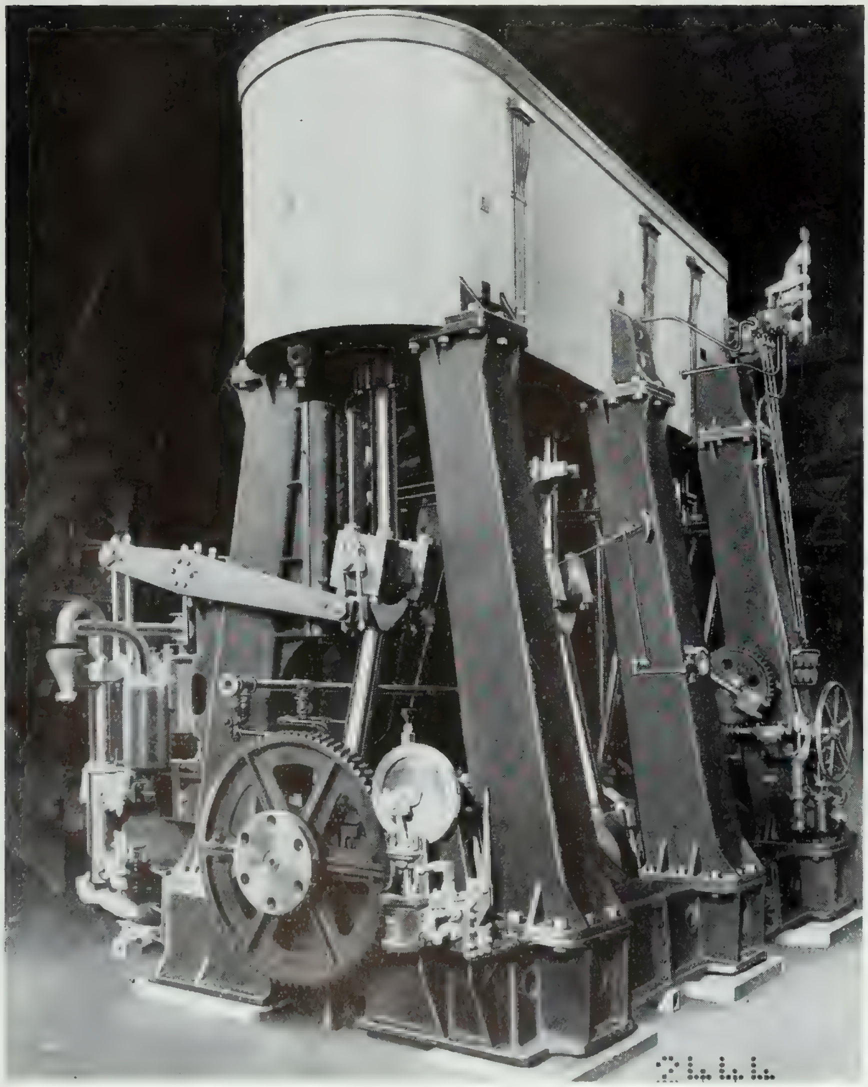


Bow view of S. S. Ocean Vanguard on trials

Standardization of The Marine

Seven Hundred Engines in Seventeen Shops are exact Duplicates in every detail

Starboard side of triple-expansion engine as set up in shops of General Machinery Corporation



In the emergency shipbuilding program, there are now under order, allotted to 17 firms in the United States and Canada, over 700 triple-expansion steam engines which are so identical that any part built and finished in any one of the 17 plants could be used in any engine built in any other of these plants. This is, we believe, a degree of standardization never before realized on large marine steam engines.

The principal characteristics of this engine are shown in the table herewith.

Principal Characteristics

Crankshaft diameter	14¼"
Main bearings,	
H. P. and M. P.	14¼"x15"
Main Bearings, L. P.	14¼"x16"
H. P. cylinder diameter	24½"
M. P. cylinder diameter	37"
L. P. cylinder diameter	70"
Stroke	48"
Steam pressure	220 psi
Steam temperature	575° F.
Vacuum at exhaust	26"
Steam pipe diameter	8"
Exhaust pipe diameter	25"
Piston rod diameter	7"
Connecting rod diameter	7"
Connecting rod length	96"
Weight	271,000 lbs.
S. H. P.	2500

Designed originally by the North Eastern Marine Engineering Co., Ltd., Wallsend-on-Tyne, England, the drawings were developed and altered to make them adaptable for manufacturing processes in the United States and

Triple-Expansion Steam Engine

Stern view of S. S. Ocean Vanguard on trials

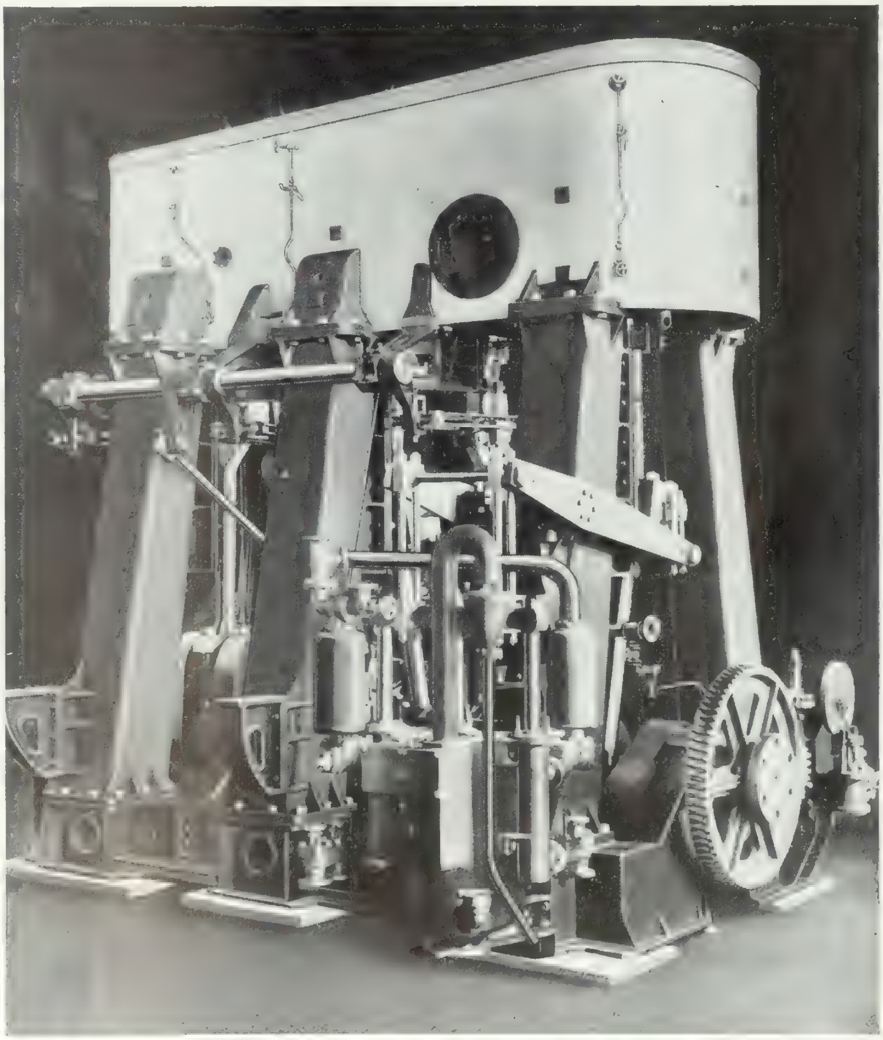
Canada. This American design work was done by the General Machinery Corporation, who furnished tracings and full engineering information to all the companies building for the Maritime Commission and the British Purchasing Commission, as follows:

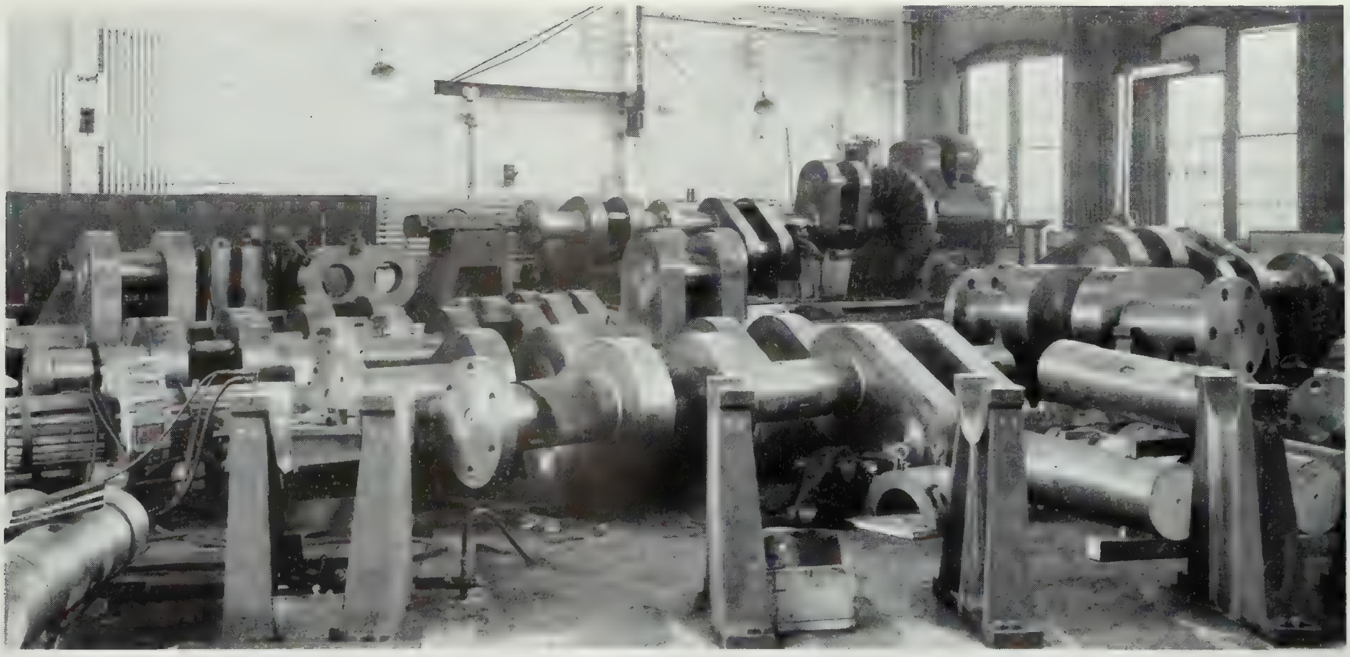
The American Shipbuilding Co., Cleveland, Ohio; Clark Brothers Co., Inc., Olean, N. Y.; Ellicott Machine Corp., Baltimore, Md.; The Filer & Stowell Co., Milwaukee, Wis.; Alabama Marine Eng. Co., Birmingham, Ala.; Harrisburg Machinery Corp., Harrisburg, Pa.; Joshua Hendy Iron Works, Sunnyvale, Calif.; National Transit Pump & Machine Co., Oil City, Pa.; Toledo Shipbuilding Co., Inc., Toledo, Ohio; Vulcan Iron Works, Wilkes-Barre, Pa.; Willamette Iron & Steel Co., Portland, Ore.; Worthington Pump & Machinery Corp., Harrison, N. J.; Dominion Engineering Works, Ltd., Montreal, Canada; John Inglis Co., Ltd., Toronto, Canada; Canadian Allis-Chalmers, Ltd., Montreal, Canada; Canadian Vickers, Ltd., Montreal, Canada.

This centralized preliminary work by the General Machinery Corporation eliminated much duplication of effort and speeded up the delivery of engines by many months.

The British Purchasing Commission placed an order for 60 of the engines with the General Machinery Corporation to power all the ships that B. P. C. had ordered in the United States. B. P. C. selected Gibbs and Cox

Port side of triple-expansion steam engine as set up in General Machinery Corporation shops





↑ ONE CORNER of the great machine shops of the General Machinery Corporation at Hamilton, Ohio, showing crank shafts ready for assembly and finishing of journal surfaces

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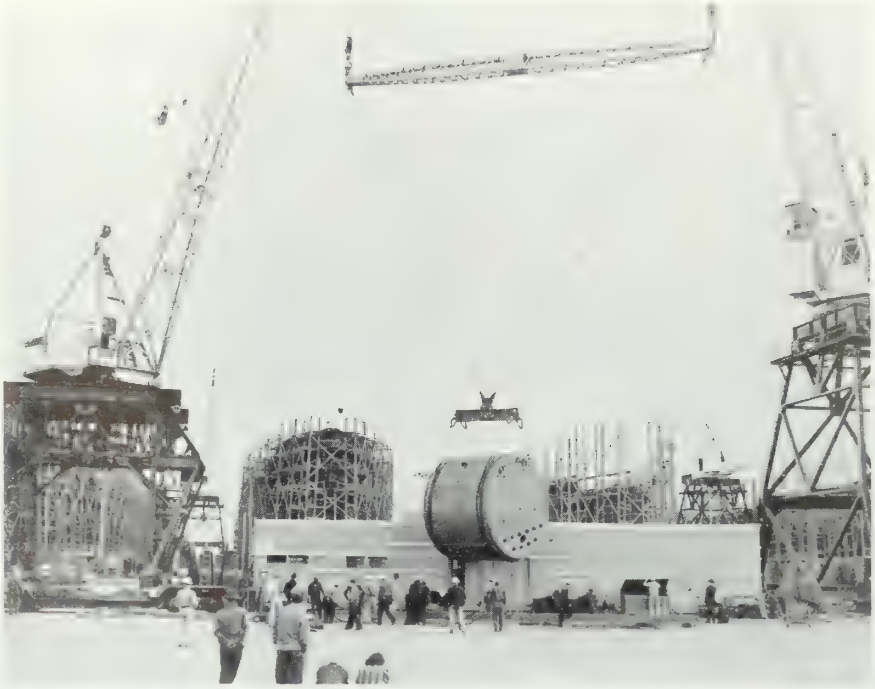
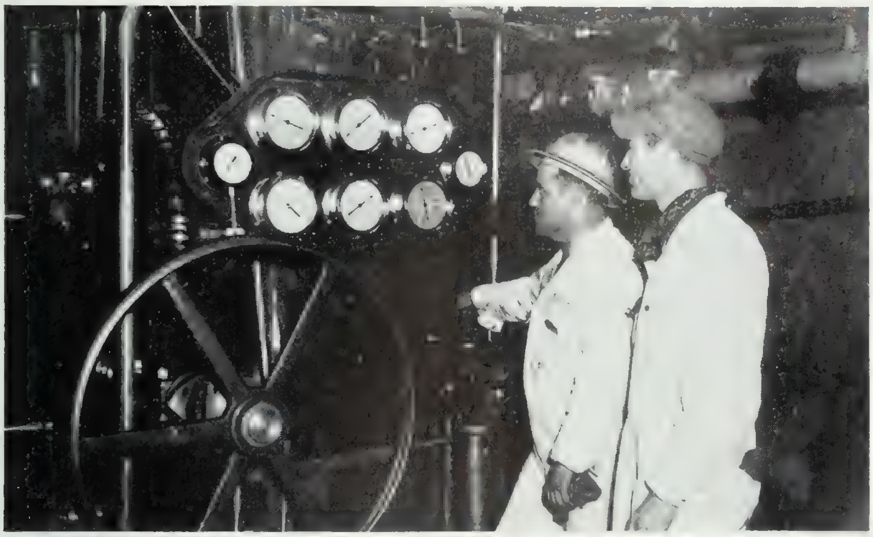
↓ CENTRAL BAY of machine shop of General Machinery Corporation, showing many engine parts in process

in New York as its representative for supervising and coordinating the engineering of this job and for placing its contracts.

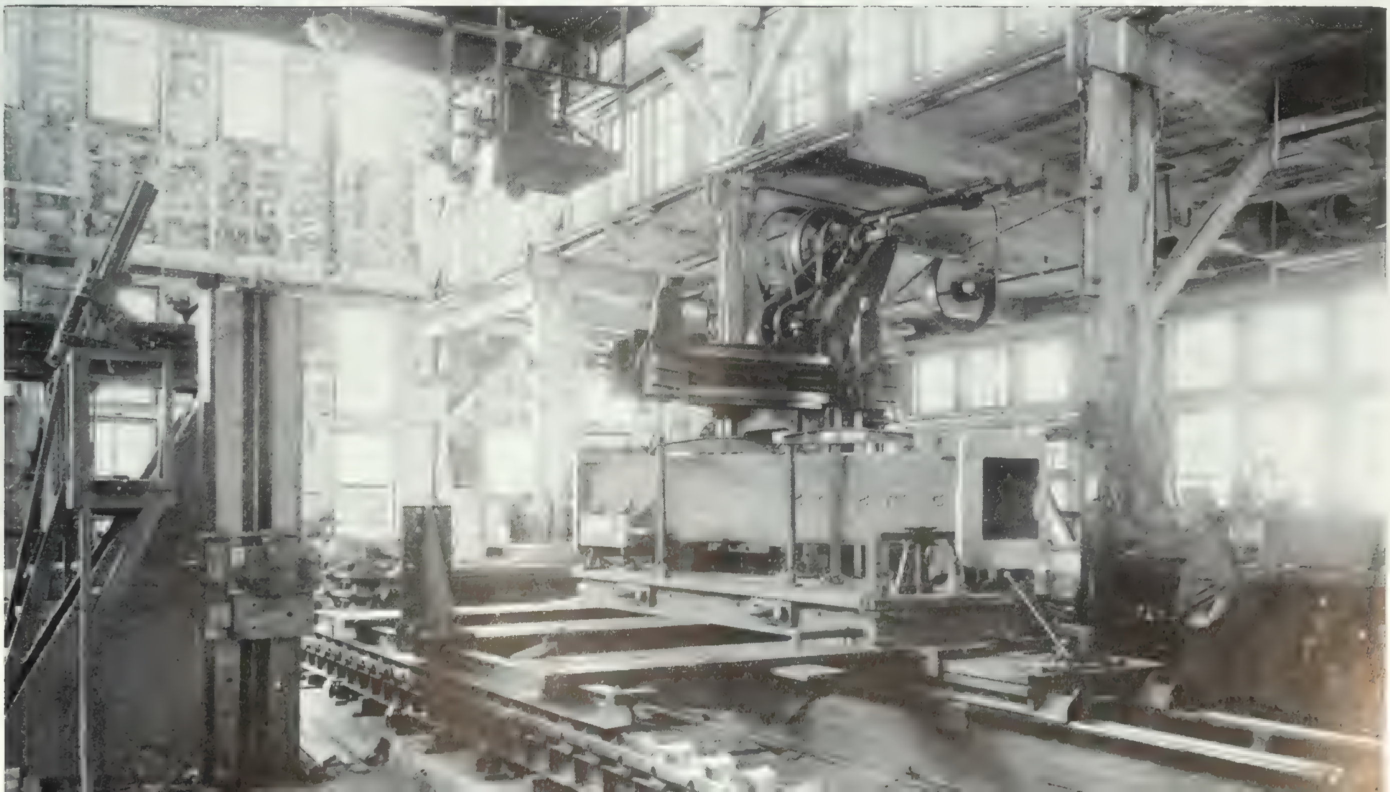
Contracts for the first engines were placed in January, and General Machinery Corporation, after making complete drawings, patterns, jigs and fixtures, delivered the first engine in July. This delivery was to the Todd-California Shipbuilding Corporation and it was one prime factor in making possible the delivery of their first ship, Ocean Vanguard, in October.

The illustrations featured in this article show parts in process at various of the American shops building the engine and also two views of the complete engine on the test floor of the General Machinery Corporation.





IN BRITAIN, triple-expansion engines call for Scotch coal-burning boilers, and one of these, built by the Western Pipe & Steel Co., is seen (upper right) going into the Ocean Vanguard at Todd-California yard. At left is shown the control stand for operation of triple-expansion engine of Vanguard. Below: A huge openside planer at the Joshua Hendy Iron Works, Sunnyvale, California, machines one of the cast iron columns that support the cylinders



The Case For The GEARED-Turbine Drive

by Arvid Peterson

Chief Engineer, Pump and Compression Departments, De Laval Steam Turbine Co.

According to some of the speakers on the subject of "Electric Drive for Ships," at the joint meeting of the Society of Naval Architects and Naval Engineers and the Society of Mechanical Engineers, in New York, December 5, 1941, electric drive, whether turbine electric or diesel electric, possesses many advantages over other types of drive, as proof of which the number of electric drive ships now under construction was cited. However, a deciding reason for turning to electric drive in the emergency has been the fact that the gear industry has not been able to supply gear reductions as fast as required. This is substantiated in a statement issued to the press by R. A. McCarty, vice president of the Westinghouse Electric & Manufacturing Co., who says: "In order to hasten deliveries, the new tanker propulsion units will not include speed reduction gears, which usually are a part of ship machinery."

During the discussion, one speaker, in comparing geared turbine drive with turbine electric drive, stated that the two per cent loss in the gear reduction necessitated cumbersome oil coolers. It is true that the loss of a gear reduction amounts to about two per cent, and that oil coolers are required. However, the six to eight per cent loss in electric transmission, with large fans hidden in the generator and a separate air cooler, which, in turn, is water-cooled, more than offsets this. Further, the propulsion motor also requires cooling, and a separate motor-driven fan is frequently used for passing the air through the cooler, and this cooler again is water-cooled.

In a 5000-horsepower electric-drive ship, the total surface of the two air coolers is 4600 square feet. An oil cooler, also, must be used with turbo-electric drive; and, for the 5000-horsepower ship, the oil cooler is designed for 59 gpm of lubricating oil. The oil cooler for a 6000-hp geared-turbine ship is for handling 220 gpm of lubricating oil, and no air cooler is required. It is hard to see how the electric drive ship has any advantage over the geared turbine ship in this particular respect.

As one of the speakers emphasized, the first and most important considerations in selecting propelling equipment are simplicity and reliability. As for simplicity, the facts just related speak for themselves, and to the extensive and complicated cooling system required with an electric drive should be added the apparently very complicated governing system used in connection with the electric-drive ships, as brought out by at least two speakers. Governing a land turbine at constant speed is not an easy job, but apparently is child's play as compared with governing the turbine of an electric-drive ship.

In regard to fuel rates, one of the speakers stated that the electric-drive ships compared favorably with the geared-turbine ships of the Export Line, described in a paper recently presented before the Society of Naval Architects and Marine Engineers. This statement calls for analysis and amplification.

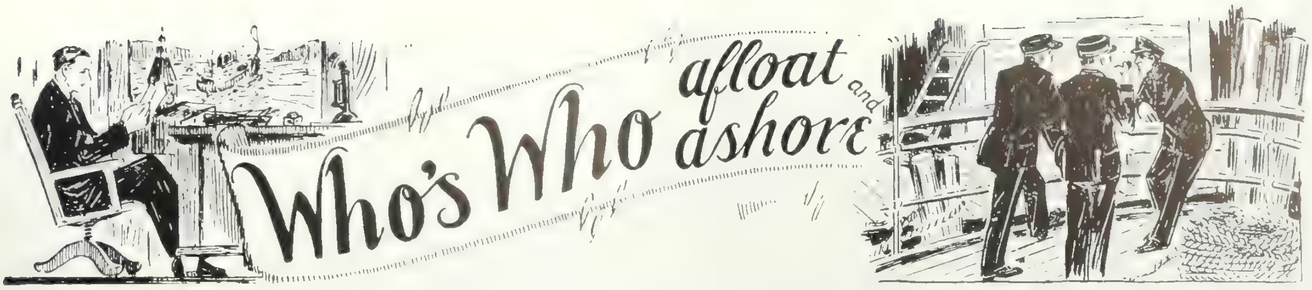
Carefully conducted tests on eight C-2 ships, built by the Federal Shipbuilding & Dry Dock Company, show an average fuel consumption for all purposes of .5455 lb. per shp, while the latest ship, the Santa Rita, has a record fuel rate of .5280 lb. per shp, based upon 18,500 Btu fuel oil. The normal shaft horsepower is 6000 and the geared compound turbine is designed for steam at 440 lb. gage and 740° F. total temperature.

The 5000 horsepower electric-drive tanker J. W. Van Dyke, described in a paper by L. M. Goldsmith before the American Society of Mechanical Engineers at the 1938 annual meeting, has a fuel rate for all purposes of .596 lb. per shp, using fuel of 19,000 Btu per lb. This is equivalent to .612 lb. per shp, of 18,500 Btu oil. The turbine of this ship, incidentally, is of the same make as the turbines in the eight C-2 ships, and is designed for the higher steam pressure of 600 lb. gage and 825° F. total temperature.

It is believed that the auxiliary requirements for the C-2 ships and for the J. W. Van Dyke are relatively and approximately the same and the comparison of fuel rates is, therefore, quite instructive. The electric-drive ship, in spite of about 35 per cent higher steam pressure and 85° F. higher steam temperature, has a heat rate about 12 per cent higher than that of geared ships of only slightly greater power.

The matter of comparative weights was also brought under discussion and in the Goldsmith paper, above referred to, it was implied that the electric-drive propelling equipment was lighter than gear drive. In comparing the two types of drive, it seems relevant to include only the propelling equipment, that is, turbine generator, motor, wiring and switchboard equipment in one case, and turbine and reduction gear in the other. Adding together the segregated weights as given by Goldsmith, the 5000-hp electric-drive propelling equipment of the J. W. Van Dyke weighs 211,700 lb., or 42.3 lb. per shp. The corresponding weight for a 6000-hp geared unit is approximately 194,000 lb., including the main thrust bearing, or 32.3 lb. per shp. The 40 to 50 per cent greater weight for the geared turbine claimed in Goldsmith's paper is, therefore, non-existent.

It was also claimed that gears get out of alignment, resulting in serious wear and increased reduction in efficiency after the gears have been in service for some time. However, with properly designed foundations and gear casings, this does not occur.



Who's Who afloat and ashore

Edited by Jerry E. Scanlon

In the Service

Experienced steamship men in all departments are being called into service by the Army and the Navy. However, the Naval Department is calling for the largest number as most of these summoned have been members of the Naval Reserve.

Harry G. Adams is now with the Port Control Office with the rank of Lieutenant Commander. He entered with a Lieutenant's rating but was promoted. Lieutenant Commander Adams was manager for the Port of Oakland in San Francisco, served for several years with Swayne & Hoyt, and was also general agent for the Panama Pacific Line.

DONALD E. KOKYER

Matson Navigation Company's contribution to Uncle Sam's Navy includes D. E. Capell, W. D. Jones, C. W. Lowith, C. M. Parker, R. L. Webber and R. L. Bromell.

Peter Curtis, John Page, Stanley Page, George Bennett, and D. M. Dysart are wearing Navy uniforms. All hail from General Steamship Corporation.

Grace Line's contribution, to date, to the Navy includes Lloyd Meyers, Arthur Grilk, Robert Skaife, Donald Kokjer, John Fletcher and Lawerence West. Kokjer's long experience as purser with the old Dollar Line running to the Orient fitted him especially for the post assigned to him. He entered as an ensign but is listed for promotion.

Interocean Steamship Corporation reports Howard G. Beadle and Edward G. Walker in service. The latter is with the Transport Service at Fort Mason.

Hugh Cawsey, Moore-McCormack Lines, entered the Navy, as did Frank Klavennes from Sudden & Christenson. J. V. Wyand entered from Luckenbach Steamship Company, and Donald Watson, Pacific Coast manager for the Weyerhaeuser interests, is now Lieutenant Watson.

LLOYD MEYERS

HARRY W. ADAMS

What your friends are doing

John T. "Jack" Bloomer, for fourteen years general freight agent for the Blue Funnel Line in San Francisco, is now connected with Otis McAllister & Co.

Harold H. Edy, of the Otis McAllister executive staff, is confined to a local hospital. He is remembered as head of the Pacific Coast offices of the United States Shipping Board in World War I.

* * *

The Government named **Edward S. Clark,** formerly with the Interocean Steamship Corporation, port consultant to the superintendent of the Army Transport Service, Quartermaster Corps, Fort Mason, San Francisco.

* * *

George V. Latham, former assistant general passenger agent for the Nippon Yusen Kaisha in Los Angeles, has recovered from a serious operation performed the middle of December.

* * *

Ray De Moro is another well-known shipping man who has gone into service. Formerly with the Interocean Steamship Corporation, he is now assistant to Captain Berry in the U. S. Army Transport Service, Fort Mason.

* * *

L. M. "Dad" LeCount, Pacific Coast executive for the General Electric Company, and one of the best-known men in his field on the Pacific Coast, has returned to San Francisco from a six weeks' visit to the Schenectady headquarters.

* * *

President Henry F. Grady, chief of the American President Lines, received a reassuring cable from **Oscar G. Steen,** vice president in the Orient for APL, that " all were safe and well." The message was sent from Manila where Mr. Steen was at war's declaration.

None of APL's staff in Shanghai, or those in Honolulu, were injured by Japan's attack.

GEORGE E. SWETT

George Swett recently returned from a trip to factories represented by his company where he conferred with officials of these companies regarding West Coast requirements for the coming year.

Companies visited included the Warren Steam Pump Company, Davis Engineering Company, Ilg Electric Ventilating Company, Kingsbury Machine Works, Inc., Diamond Power Specialty Co., Carrier-Brunswick International, Inc., and others.

While in the East Mr. Swett attended the banquet of the Society of Naval Architects and Marine Engineers, of which he is a member. He was accompanied on his eastern trip by Mrs. Swett.

* * *

Edward S. Clark, former Interocean Steamship Corporation official, is now port consultant with the Superintendent of the Army Transport Service, Quartermaster Corps, at Fort Mason.

His service duties will have to do with maintaining relations with all the commercial shipping companies and with the U. S. Maritime Commission in connection with the movement of cargo for the Army.

Clark has been engaged in the steamship business for 17 years, part of that time with General Steamship Corp., and while with Interocean, managed their United Kingdom service.

Iglehart of Grace

The scheduled visit of **D. Stewart Iglehart,** president of W. R. Grace & Co., to all Pacific Coast offices and terminals was interrupted while he was in Los Angeles by the outbreak of war in the Pacific. This was the first visit to the West Coast of this American shipping leader.

During his brief stay in Los Angeles, Mr. Iglehart stressed the importance of more ships for Latin America and outlined his forecast of a much more promising expansion of trade between the United States and the Spanish Americas.

Mr. Iglehart revealed that his company had planned larger and faster combination cargo-passenger ships for the intercoastal trade and has gone so far as to submit these plans to governmental authorities. He said, "whether intercoastal passenger ship service is resumed depends largely on whether the Government will subsidize this trade, as the traffic alone won't make it profitable."

Grace Line, subsidiary of W. R. Grace & Co., operated the four big "Santa" liners from the Pacific Coast to New York, via Latin American ports, until 1938. They were then sent and are now running from New York to Caribbean ports.

* * *

Shipping men in many parts of the United States as well as officials of steamships learned with regret of the deaths of **Mr. and Mrs. George Ragatz** in Los Angeles within a few days of one another.

Mrs. Ragatz had passed away rather suddenly, and, while funeral arrangements were under way, her husband suffered a paralytic stroke which proved fatal.

Double services were held at the Little Church of the Flowers, Forest Lawn, Glendale.

For many years Mr. Ragatz was an official of the Carmichael Traffic Corporation in charge of the company's Marine Department. He is best known to marine men during the years he was with the Grace Line in Los Angeles. During the last three years, he had been in business for himself, handling an LCL consolidated business for California food products to eastern markets.

Howard N. Middleton, secretary-manager of the Pacific Westbound Conference, has joined the San Francisco office of the Division of Emergency Shipping as special assistant to **E. J. Bradley,** Pacific Coast representative.

Mr. Middleton will continue to serve the Pacific Westbound Conference. His selection to the DES is a good one as he has had a wide range of experience, which admirably qualifies him for the post. He sreved with the American-Hawaiian Steamship Company before assuming his post with the Pacific Westbound Conference.

* * *

When the wooden steamship **Willapa** was pounded to destruction by mountainous seas near Port Orford, Oregon, on December 4, her twenty-four crew members were saved by the Coast Guard. The vessel was bound from Coos Bay to San Francisco with 1,100,000 feet of lumber.

Captain Oscar J. Petterson of San Francisco was the master. Other officers were First Mate E. Stahbaum, Second Mate Albert Anderson and Third Mate Harold Wicks, all of San Francisco. Chief Engineer was Archer Beach whose home is in Long Beach.

The Willapa was owned Jointly by the Hart-Wood Lumber Company of San Francisco, and James Lyons and Howard Irwin, operators of Mill B., Inc., North Bend, Oregon.

* * *

William A. McLean, purser of the liner Santa Paula, spent the holidays in San Francisco with his family. His vessel was taken by the Government for a voyage to Africa, and during this period McLean secured leave of absence.

He is well known on the Pacific Coast as he started his career here with the old Pacific Mail in the freight clerk's office more than twenty years ago. He served out of the Port of San Francisco on vessels of the Panama Mail Steamship Company, which was taken over in 1932 by Grace interests. For the last three years he has been on the Santa Paula out of New York to the Caribbean.

HOWARD N. MIDDLETON

WILLIAM McLEAN

Richard Specker, assistant to the traffic manager of Luckenbach Line, New York, has resigned and is now chief of the Rate Committee of the Atlantic Coastwise & Inland Water Carriers Association.

Stringent regulations and revision of house rules have gone into effect at the Army & Navy Club in the Hotel Fairmont, San Francisco, it was announced by **Walter J. Walsh** and **Captain Lewis Mesherry,** president and managing director, respectively.

As headquarters for the officers of the fighting forces of Uncle Sam, a complete recheck on all members has been made. Close and searching scrutiny of all applicants, regardless of rank, has been completed.

The precautionary measures, Captain Mesherry explained, followed instantly upon the attack by the Japanese and subsequent declarations of war by Axis countries. It followed a protective program outlined by the Army & Navy Club board of directors a year ago.

* * *

Thomas G. Plant, vice president of the American - Hawaiian Steamship Company, has been granted leave for the duration. He is now Commander Plant, USN., attached to the Port Directors' Office in San Francisco.

* * *

J. T. Kirby, vice president of W. R. Grace & Co., who has been handling the heavy volume of ship sailings and arrivals out of New York to Caribbean ports, paid a hurried visit to the Pacific Coast late last month.

He inspected Pacific Coast terminals and after conferring with Fred L. Doelker, vice president, visited the Northwest offices and piers accompanied by A. S. Rupley, manager of the West Coast for W. R. Grace & Co.

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The question of whether **H. Harris Robson** would continue as head of the Division of Emergency Shipping of the Maritime Commission or return to his post as vice president of the United Fruit Company, was undecided at press time.

It is recalled that Mr. Robson, one of the country's top flight shipping executives, went to the Maritime Commission with the understanding he would be permitted to return to his company in February of 1942, after serving twelve months.

Appreciation of the yeoman service rendered by **Mark H. Gates,** secretary of the Board of State Harbor Commissioners, San Francisco, was shown by his election as second vice president of the American Association of Port Authorities during the national convention, held in Miami, Florida. Gates was formerly third vice president.

Gates is one of the oldest members of the Harbor Commission and has won an enviable place among Pacific Coast shipping men for his untiring efforts in behalf of Pacific ports. His zealous attention to duties of office with the national body was recognized in his most recent honor.

Shipbuilding School

The Pacific Coast Shipbuilding School has moved from 573 Mission Street to 105 Market Street in the Seaboard Building, according to Thomas Connell, secretary of the school.

Northern California's largest shipfitting school has been forced to enlarge its quarters three times, due to the increasing interest in training for National Defense jobs. The entire second floor has been taken over which contains classrooms and a "loft" where practical training is taught. Between 250 and 300 men are now enlisted and are registered from 28 states and four foreign countries.

William Ingram, recently brought from the Bethlehem Steel Company's yard at Fore River, Mass., to act as Supervisor of Cruiser Construction, has been added to the staff. Among other prominent shipbuilding men in the Bay area who make up the faculty are: Gus Esse, chief loftsman; Victor Christensen, superintendent of the North Yard; John P. McCormick, assistant night superintendent; Norman Reimers, Foreman Duplicating Department; Robert McCoy, hull foreman, and James H. Bullard, Hull Planning Department, all of the Bethlehem yard. A. Mori, chief loftsman, Todd-California Shipbuilding Corp., and Frank Grimes, U. S. Naval hull inspector, are also on the staff. L. T. Taylor is director of the school.

MARK M. GATES

L. T. TAYLOR

Relatives and friends on the Pacific Coast were relieved upon receipt of a cable from Hongkong announcing that John Raymond, president of the American Trading Company, was safe in the Crown colony, which at the time of going to press was under heavy assault of Japanese.

Commodore H. E. Nedden of the Canadian National Steamship, retired on December 28, after 31 years service operating from Vancouver, B. C., to Alaska. His last command was the S. S. Prince George. Reason for his retirement was the 65-year-old age limit.

A memorable event in the sea career of Commodore Nedden was when he transported King George and Queen Mary as passengers on the liner Prince Robert about British Columbia waters in 1939.

Captain Nedden is from a seafaring family. His father was master of a sailing ship. Captain Nedden, like so many other English lads, started early to sea. He was fifteen when he left his home in South Shields, near Newcastle, and went to Glasgow, where he started as an apprentice for the Island Line.

Since 1932 he has been commodore of the firm's fleet and has captained the liners Prince Henry, Prince David, and Prince Robert. Commodore Nedden plans to continue to make his home in Vancouver.

* * *

Captain Curt Zastrow was rerelieved as skipper of the liner Santa Rosa, being succeeded by **Captain Alf Adler.** Both skippers are well known on the Pacific, as they were in command of vessels out of West Coast ports before sailing out of New York.

Captain Zastrow still retains his home at Candle Stick Point in Marin County.

Other changes in ship commands include: Captain C. H. Porter, relieving Captain Enar Svedstrup on the steamer Mahukona; Captain C. A. Berndtson is master of the Lurline, vice B. V. White; Captain J. A. Gaidsick relieved F. H. Bain on the S. S. Dakotan.

* * *

Out and around again, after being hospitalized with serious injuries, **Mrs. Katherine Armes,** wife of George A. Armes, president of the General Engineering & Drydock Company, is completely recovered.

On December 8, Mrs. Armes' automobile was in a collision with another machine near the plant of the General Engineering & Drydock plant in Alameda.

The Army Transport Service claimed another well-known steamship executive, **R. S. Wintermute,** for whom a farewell party was given by business associates. Mr. Wintermute was for many years with General Steamship Corp., but about twelve months ago joined the Solship Line.

* * *

A cooperative shipyard, created by fifteen Oakland shipyard workers, all master mechanics, pooling their life savings, started January 1. The yard is named **Oakland Shipyard Corporation** and will build vessels exclusively for national defense.

A total of $50,000 was invested by the fifteen. The site is the former Bagley Shipyards, adjoining Oakland's Yacht Harbor.

Officers in the cooperative venture include: Harold J. Moss, president; Devere F. Baker, vice president, and Ernest Collins, secretary-treasurer.

* * *

Wilfred Page, well and favorably known in San Francisco's marine insurance circles, has opened his own office at 310 California Street as an independent marine adjuster.

Mr. Page is one of the veteran marine underwriters of the Pacific Coast, having been associated with Geo. W. Billings & Co. of San Francisco for over 30 years. By experience and temperament, he is very well qualified for success in the field of average adjusting, wherein he intends to specialize.

* * *

Edward Chamberlain, operating manager of W. R. Chamberlain & Co., and brother of W. R. Chamberlain, owners and operators of coastwise vessels, died on December 18, in Oakland.

* * *

December 12, rites for **Captain Ernst W. Kallenberg** were held in San Francisco. The well-known shipmaster passed away two days previously, after a short illness. Services were under auspices of Dorion Lodge 216, F. & A. M.

A widow, Mrs. Eugenia Kallenberg, a son, George W., and a daughter, Mrs. Marve McCabe, survive.

ARCH F. CAMPBELL
Newly appointed sales manager, Superior Engine Division, National Supply Co.

Daniel G. Fraser

Many veterans of the old Union Iron Works will recall Daniel G. Fraser, who for so many years presided over the great machine shop of that plant in the days when it was the pioneer and only steel shipbuilding yard on the Pacific Coast. Dan passed away in San Francisco December 15 at the age of 89.

For three decades, Dan Fraser produced machines and machinists. The gathering at his funeral was largely composed of older men, most of whom had been apprentices under this master mechanic when his old shop was producing: the engines for such ships as the U. S. battleship Oregon and the U. S. cruiser Olympia; the operating mechanism for the dome of Lick Observatory; the great hoists for the Anaconda mines at Butte, Montana; the power plants for the first electric railroads in San Francisco; and many other notable machinery installations.

As a trainer of boys, he had few equals, and many a big executive owes his first start on the ladder of success to some friendly advice by "Honest Dan."

After retiring from the Union Iron Works, Dan Fraser had a long and honorable career as a commissioner on the Board of Public Works of San Francisco.

Randolph H. Washburn has been released from the U. S. Army to become as Ensign in the U. S. Naval Reserve. He is the son of Captain E. D. Washburn, in charge of the Navy Hydrographic Office in San Francisco and formerly in command of the U. S. S. California.

* * *

A veteran of 38 years as an officer in the U. S. Navy, **Rear Admiral Ralston S. Holmes** took command of the Eleventh Naval District on December 22, succeeding Rear Admiral Charles Blakely, who has been ordered on sick leave.

The new commandant, according to the Navy, "will head a district organization geared for wartime activity."

In 1937, he was director of naval intelligence. Previously he had commanded destroyer division 32 and destroyer squadron 11. The battleships on which he served included: Tennessee, Oregon, Wyoming, Wisconsin, North Dakota and Idaho. He also served on the cruiser Tacoma.

* * *

Five young lawyers in San Francisco law offices have joined the U.S. Navy Reserve. From McCutcheon, Olney, Mannon and Green has come Lieutenant Dudley Harkelroad; from the office of Graham Chalmers, Lieutenant Henry R. Rolph; from Lillick, Geary, Olson & Charles, were Lieutenant Gilbert Wheat, Ensign Harry L. Haehl, Jr., and Ensign Edward D. Ranson.

* * *

Early in January, the U. S. Navy called to service **Raymond O. Flood,** vice president and general manager of Flood Bros., steamship operators and stevedores, and he is now in the U. S. Navy Port Director's office in San Francisco.

* * *

On December 28, **C. H. Chandler** died suddenly after a brief illness, in San Francisco, at the age of 59.

Up to the time of his death, he was vice president and general manager of Sudden & Christenson, having joined that firm in 1920 as New York manager, later being transferred to San Francisco.

In his earlier years, he was a traffic department executive of the Union Pacific Company, from which he was appointed to the Shipping Board during World War I.

The many friends of **Edgar R. Parker** are mourning his untimely passing on Friday, January 2, at the age of 58.

For years Mr. Parker has been associated with the Claims and Insurance Department of the McCormick Steamship Co. of San Francisco, and for the past twelve years he has been manager of that department.

Mr. Parker was always active in cooperative efforts to raise the standards of marine insurance and was a Past Chairman of the Pacific Coast Ocean-Claims Association.

Carroll Resigns Post

RUSSELL J. CARROLL

The many friends of Russell J. Carroll, Resident-Plant Engineer for the U. S. Maritime Commission at the Richmond Shipbuilding Corporation, Richmond, California, were surprised on January 6 by an announcement that he had resigned and was leaving the employ of the Commission.

From the 9th of June, 1941, to December 31, 1941, Mr. Carroll was one of the spark plugs of the organization that transformed a mud flat into one of the best-equipped yards on the Pacific Coast—a yard of nine ways that has launched one ship and has four more hulls well along. During that period, Mr. Carroll averaged more than 15 hours a day, seven days a week, working with great concentration at top speed.

In a statement to the press, dated January 5, Mr. Carroll says:

"When I left Washington, the Richmond plant was scheduled to cost $4,800,000; but, after several additions and changes in the yard and its facilities, the money appropriated is now slightly more than $11,000,000. All of the above work has been designed and the majority has either been completed, or is nearing completion. The only big project that is left to complete is a prefabrication building, which will prefabricate the upper deck sections for both the Todd-California and Richmond yards. The plans, however, for this building are complete and are being placed with the different steel fabricators in this section for bids today. After this plant is complete, with Richmond having 9 shipbuilding ways and the Todd-California Company having 7, a total of 16, I am sure that the combined efforts of these two plants will very soon start launching on an average of 7 to 8 hulls per month, and, so there will be delivered to both the British and the United States the ships that are badly needed. Last June, the yard had a contract to build 24 EC-2 cargo carriers and during the early fall, after the yard had been inspected by Maritime officials, the contract was extended to include an additional 12 ships. In the past few days, this contract has been again extended, this time for 14 additional, making a total of 50 ships to be built at the Richmond yard.

"I am leaving, satisfied that this yard will keep progressing, and if nothing unforeseen happens it should be the outstanding yard on the West Coast, one of which all who had a part in making it a reality should be proud. New records can be made here, and I think they will be.

"This country needs all the defensive and offensive effort it can muster to take care of the Nazis and the Japs, and it is up to every real American to do his best. Only through cooperation and that extra effort, which Americans always have in reserve, can this job be accomplished in record time. While I am leaving this particular assignment, it is not 'good-bye' either to the West Coast or to the War Program. I shall take a short rest in Florida and then decide where I will be most useful in assisting America's all-out war effort."

Keep Posted!

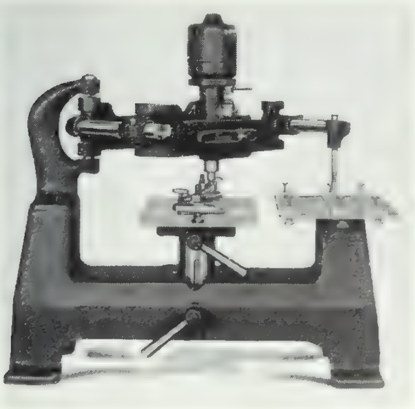
Recent Development in Ship, Yard and Dock Equipment

Production Speeded For Turbine Blades

A precision machine which does the work formerly performed by four others, and does it five times faster, is turning out blades for ship turbines at the Westinghouse South Philadelphia, Pa., plant. When the steel blank is fed into it, the machine cuts 25 surfaces, bevel edges and straight edges, in one 10-second operation. Real gain in production will include the release of other machine tools, and the men who operate them, for other work.

The big vertical broaching machine was adapted to turbine blade manufacture to help speed production of vital marine equipment. The broacher, with special parts designed by Westinghouse tool experts, is the only one of its type in the world. A series of cutters were designed with teeth graduated in length, so that the upper portion of the row cuts deeper than the lower part. These broaches are set along the inside of a narrow three-sided casing eight feet long. The casing is moved up and down by a hydraulic ram.

Steel blanks are fed into the machine at the rate of seventy per hour.



Engraving machine H. P. Preis

The operator simply touches the button controls and down moves the ram. The cutters start shaving away at the steel. Rows of saw-shaped teeth in the center carve out an opening in the blank. Other sets of cutters make additional niches and bevel edges to form the root of the blade. This root corresponds in shape to furrows on the outer surface of the turbine rotor or the inner surface of the casing. The blades are fastened by forcing the root into the furrow and locking it in place.

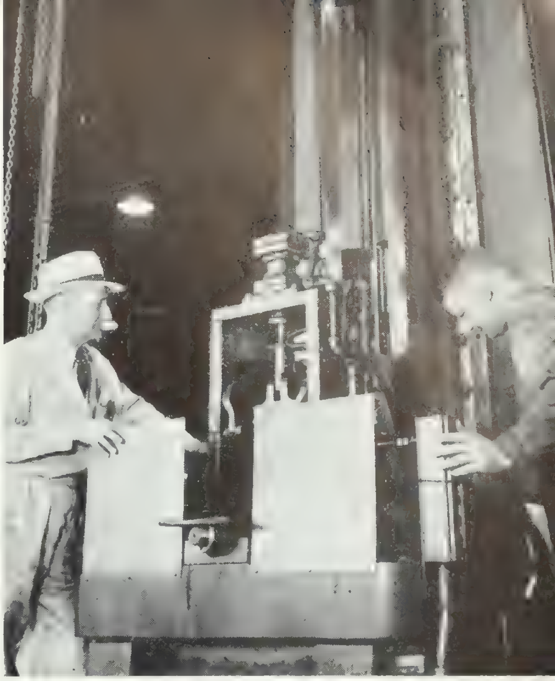
As the casing of the broaching machine moves upward, a stream of oil is sprayed over the cutters which removes the tiny chips of steel shaved off by the saw teeth of the machine. If the chips were not removed, they would "cold weld" or stick to the cutters, dulling and clogging the sharp teeth.

In operation since July, this broacher has been literally "stamping" out intricately-shaped turbine blades. The South Philadelphia plant will have in operation a total of 10 broaching machines when installation of new ones, now under way, is completed.

Improved Pantographic Machine

An improved machine of pantographic operation, for rotary engraving, electrical marking, and acid etching, is announced by H. P. Preis Engraving Machine Company. Separate heads, quickly interchangeable, are used for the three classes of work, and the ball-bearing-mounted pantograph provides reductions from 1.8 to 1 down to 5 to 1.

With the engraving head, shown in the illustration, the depth of cut is controlled, independent of the depth of the master characters, by a micrometer adjustment mechanism. Movement of the cutter, toward and away from the work, is controlled by a cam-action drop lever, independent of the vertical position of the tracing stylus, with resulting ease of handling, cleanness of cut, and accuracy.



Westinghouse broaching machine for turbine blades

The electrical marking head is served by a transformer with a ten-stage voltage-control switch, for selecting any desired degree of marking, from very light to very heavy. Contact of the marking point with the work is controlled by sensitive spring pressure, and the point may be removed from its fixture for freehand marking. This unit will mark steel of any degree of hardness and is particularly useful where engraving and stamping are not practicable.

The acid etching head is used for cutting through an acid-resisting coating on metal or glass, in preparation for the application of the acid etching fluid.

Designed for mounting on a bench, the basic machine is a compact unit measuring 21 inches long, 14 inches wide, and 15 inches high.

Largest Installation Fluorescent Lamps

The world's biggest single fluorescent lamp installation in the new $47,000,000 Ford bomber plant near Ypsilanti, Michigan, was announced recently by W. E. Poor, executive vice president of the Hygrade Sylvania Corporation, with head offices at 500

(Page 114, please)

News FROM THE PACIFIC NORTHWEST

by Daniel L. Pratt

Seattle Yards Ready To Go

Delays which have held back abnormally the progress of the shipbuilding program at Seattle, such as shortage of steel, essential parts, etc., have apparently been gradually overcome, and it looks now as though early in 1942 this port, famous in this war for airplane production and in World War I for shipbuilding, will take its rightful place as one of the leaders in the nation in carrying out its $500,000,000 share of the two-ocean Navy program.

Most important news is that the largest yard at Seattle, the big destroyer plant of the Seattle-Tacoma Shipbuilding Corp., is finally in full swing and will launch its first vessel, the Carmick, about February 1, to be followed by the U. S. S. Doyle, February 15. Twenty-three more destroyers are building at this yard, which has contracts for a total of $182,000,000. For a few months, these boats will be launched at the rate of one a month, and from then on at the rate of one a week. The main yard cost $4,600,000, and a new adjoining yard for outfitting the vessels cost another $1,000,000.

So rapidly is the entire industry at Seattle taking shape that it is expected that by January 1, the total number of employees occupied in the program will be over 23,000. The machinists' union estimates that 1000 trained marine-installation men alone will be required to handle the work.

The Associated Shipbuilders yard, on Harbor Island, is expected to launch the first of four $4,500,000 seaplane tenders on January 15, and another one in March. Six more vessels of this type are under construction at the **Lake Washington Shipyards** with several more mine sweepers and net tenders under construction at the **Lake Union Drydock & Machine Works,** on Lake Union, and the **Winslow Marine Railway,** at Winslow on Bainbridge Island. At the latter yard, two keels have been laid for some weeks, two more are on order and other work will undoubtedly follow. Wood shipyards are also busy on mine sweepers and other naval auxiliary craft, and the Todd-Seattle Drydocks, Inc., has done conversion and repair work running into millions of dollars. To the contracts already held by the Associated Shipbuilders was recently added another for $14,000,000 for the construction of six steel Navy mine sweepers. These vessels will be 225 feet in length, and the new order increases the yard's backlog to $33,000,000. The yard is now employing 1200 men. To the Puget Sound Navy Yard has also been allocated a new order for eight "escort" or "mystery" ships, said to be smaller in size than Corvettes; equipped with submarine listening devices and depth charges; and capable of traveling long distances.

17 Corvettes in B. C. Yards

Munitions Minister C. D. Howe of Ottawa, has instructed two of the West Coast yards to proceed immediately with the construction of 17 Corvettes, small twin-screw destroyers, at a cost of $25,000,000. The vessels will be built by **Burrard Drydock Co., Ltd.,** of Vancouver, and **Yarrows, Ltd.,** of Victoria, and are a part of an expanded program contemplating the completion during 1942 of 38 Corvettes, 25 mine sweepers and 16 trawlers.

Eighth C-3 Ship To Be Launched

As we go to press, **Seattle-Tacoma Shipbuilding Corporation** planned for December 30 at the Tacoma plant the launching of the eighth C-3 freighter of the thirty-two this yard is under contract to build for the Maritime Commission. The keel of another vessel was laid on November 27 on one of the new ways recently completed. Keel layings, launchings, trial trips are becoming routine events at this yard, which, in addition to the big order for C-3 freighters, also has a contract for five naval tankers. The increasing activity is shown by the fact that the Tacoma yard has jumped employment over a thousand men in a few weeks and, at the time of writing, has a total of over 4200.

Seattle Port Profits Heavy

Highest net operating profit for the **Port of Seattle** since 1934 will be made for 1942, according to a forecast made by Municipal League in a condensed summary of revenues and expenses. This will be the highest revenue in eight years. The total interest and redemption payments due on $5,800,000 port bonds outstanding will reach a peak of $559,000 in 1942 and the port is making a levy in excess of its minimum needs to bolster its cash position.

Oregon Yard Leads on Liberty Ship Production

Officers of the **Oregon Shipbuilding Co.** are justly proud of a report issued by the Maritime Commission December 6, which gave their plant the highest rating on actual production attainment of any yard, as related to the number of its ship ways. The Portland shipyard was first with 49.8 per cent total gain per way up to November 1. **California Shipbuilding Corp.** was second with 42.7 per cent, **North**

Carolina Shipbuilding Co., Wilmington, N. C., third with 30.3 per cent. **Richmond Shipbuilding Co.** was fifth with 27.4 per cent. Six of these vessels have been already allocated to American steamship operators.

Loss of Matson Liner Mauna Ala

While American shipyards strove mightily to build new ships, the fine cargo liner Mauna Ala, because of the blackout of navigation aid lights and the silencing of the radio beacons at the mouth of the Columbia River, lost her bearings and went on treacherous Clatsop Spit, and together with her valuable cargo is practically a total loss. Ships and tugs endeavored to pull her off the shoal but with no success. Her cargo consisted of 60,000 Christmas trees as part of her deckload, also lumber and shingles, little of which was salvaged, on account of her exposed position.

War Restricts Shipping

Immediately following the Japanese attack on Honolulu, all shipping from Puget Sound was canceled and drastic port regulations put into effect. All fishing vessels were also tied up as fast as they made port. Already, however, the Navy has lifted the ban on fishing vessels. On merchant marine, drastic regulations were put into effect as in other ports, but Admiral C. S. Freeman, 13th Naval District Commander, has announced that armed escorts will be provided by the Navy for all "important vessels from the Northwest and Alaska." The Navy is especially interested in the large number of ships plying between Puget Sound and the Alaska Army and Navy aircraft bases.

Old Scrap Load Finally Landed

After long idleness in Victoria, B. C., the Greek steamship **Boris** was at Ames terminal in Seattle late in November, discharging a cargo of scrap iron that had been in the vessel's hold for more than a year. The vessel was tied up in Victoria when the crew refused to sail the vessel for Japan, where the cargo was to be delivered. The scrap was loaded in Portland, Oregon, in September of 1940, and the vessel went to British Columbia for bunker supplies. With Greece at war with the Axis, of which Japan is a member, the crew refused to take the Boris to that country. The ship will now come under the control of the Greek Shipping Committee in London, which means in effect she will be at the disposal of the British minister of shipping.

Marine Shorts

Shipping men estimated early in December that **Northwest lumber** will move to the East Coast in intercoastal ships to a total of 75,000,000 to 85,000,000 feet during January as the result of freezing the product from priority rules by the Maritime Commission. About forty ships are left in the intercoastal trade and the only limitation in the movement for the present will be the demand for space for Government lumber to the Canal Zone.

* * *

The big seagoing yacht **Moonlight Maid,** which has sailed under both the American and British flags and for a time was a rum-runner, is being converted into a towboat at the **British Columbia Marine Co.** yards at Vancouver. She has been purchased by Capt. Paul Armour of the Armour Salvage & Towing Co. Originally launched as naval sloop-of-war Wasp, she is 168

A bird's-eye view of Associated Shipbuilders yard, on Harbor Island feet long, with 33-foot beam. Amour will remove the vessel's bowsprit and install a towing machine, but will make very few other changes, as he expects to use her both as a towboat and a pleasure boat.

The bad weather which generally prevails along the Inside Passage to Alaska in November and December took its toll in several different instances within these months. First there was the well-known steamer **Cordova** which, 4½ miles off its course, according to the hearings before the Navigation Board, struck on a reef in Chatham Straits, Southeastern Alaska, late in November. She was extensively damaged but no lives were lost. About the same time, the Alaska Steamship Company's **Aleutian** struck on Ripple Rock in Seymour Narrows on her way north. She apparently bounced over the rock, puncturing the double-bottom in several places, and was able to make Seattle at half speed. Another was the **Bering,** which lost her mechanical and hand steering gear in a gale of wind between Seward and Ketchikan. U. S. Coast Guard cutters towed the Bering through the rough waters of the Gulf of Alaska, but she limped under her own power into Ketchikan where arrangements were made for her repair before proceeding south.

* * *

The **American Mail Line,** operating from Seattle and other Northwest ports to the Orient, has declared a dividend of $1.00 a share payable December 15 to stockholders of record. This will be the company's first dividend as it only began operating under a reorganization arrangement April 1, last year. With nine ships operating in the transpacific service, capacity cargoes have been carried by the various units of the fleet since the line's inception.

* * *

Two Seattle stern-wheel steamers are due to be taken over by the government for use on the Yukon. The boats are Skagit Belle and Skagit Queen, both owned by the Skagit River Navigation Co. Belle was just completed by the Lake Union Drydock & Machine Works, and had her trial trip about December 1. She was built to serve upper-river points on the Skagit, and will probably be the last stern-wheeler built on the Sound. **Capt. Harry McDonald,** master of the Skagit Chief, will probably take command of the new boat, if and when she enters the service of the Government.

* * *

The well-known Alaska freight and passenger liner North Coast, of the Northland Transportation Co., has been chartered by the Army. She is the third of this fleet taken over, the others being North Wind, by the Army, and North Haven, by the Navy.

* * *

Writing to **Col. W. C. Bickford,** general manager of the Port of Seattle, **The International Longshoremen and Warehousemen's Union** pledge that there will be no stoppage of flow of material through the port during the present war. "The best defenders of the docks and warehouses in Seattle are the ones who man the docks and warehouses—the membership of the I. L. W. U. We pledge an uninterrupted flow of material through this port to hasten the defeat of Japan and the other Axis powers," wrote **J. Stevens,** secretary of Local No. 1-9.

Marine Short-Shorts

Following dedication of the new ports of **Kennewick** and **Pasco,** near the junction of the Snake and the Columbia rivers, the inland empire region was formally opened to river traffic October 30. . . . Lake Washington ship canal is closed now to all traffic between sunset and sunrise. . . . One of the few remaining river boats, **Annie Comings,** of Portland, is to be dismantled and used as a houseboat by her owner. . . . **Union Oil Company's** tanker **Paul M. Gregg,** making her maiden voyage on the coastwise run, docked at Seattle Thanksgiving Day. . . . Alaska liner **Aleutian** sheared through the heavy pier at the Heffernan Terminal at Seattle November 29, resulting from a misunderstood signal. . . . After a long delay, motorship **Donna Lane,** damaged in a gale in Alaska waters, has returned to home port. . . . Reduced auto ferry rates were put into effect on practically all runs of the **Black Ball Line,** effective January 1. . . . **Oregon** and **Columbia River** shipbuilders and workers have pledged all-out aid since the beginning of the Japanese War. . . . Fifteen more vessels, including 14 yachts and a troller, have been turned over to the **Coast Guard** for defense patrol duty on Puget Sound.

Personalities

Col. W. C. Bickford, manager of the Port of Seattle, is chairman of the new Seattle Waterfront Defense Committee, purpose of which is to coordinate such activities as small boat patrol with Coast Guard, and issuance of identification cards. A central waterfront office will be maintained. . . . **Capt. John H. Peters,** inspector of construction of the $1,500,000 turbine steamship just completed at Seattle for the U. S. Coast and Geodetic Survey, will command the vessel when she goes into service July 1. **Lieut. Comdr. Chas. A. Shaw** will be executive officer, and **Wm. E. Greer** will be the vessel's engineer. . . . **D. R. Ostrander** of the Great Northern Railway was elected president of the **Seattle Transportation Club** at the annual election December 6. . . . **Howard L. Grader,** 26 years old, was one of those who lost his life when the motorship Oregon collided with a naval vessel off Nantucket, Mass. This vessel, a C-1 type motorship, was built at the Tacoma plant of the Seattle-Tacoma Shipbuilding Corp. and launched as the Cape Cleare . . . . Effective December 6, **William Ferrari,** well known among transportation men on the Seattle waterfront, joined the staff of the **Lehigh Valley Railroad** as chief clerk. . . . . After 31 years' service on the Pacific Coast, during which he navigated ships 1,750,000 miles without accident, **Capt. H. E. Nedden,** commodore of the Canadian National Railway Co.'s fleet, has retired. Capt. Nedden became commodore of the Canadian National fleet in 1932. . . . **Charles R. Monteiro** of the engineering office of the Coast Guard has been transferred to San Juan, Puerto Rico. . . . **Capt. Ralph (Matt) Peasley,** veteran skipper of sailing vessels, many times a hero in Peter B. Kyne's sea stories, is now living in Aberdeen, and although 75 years old, has endeavored to renew his license and offer his services to the Government.

News FROM THE PACIFIC SOUTHWEST

by K. M. Walker

Concrete Ships

The Concrete Ship Constructors, formed by partnership of Tavares Construction Company, Inc., and Elliott, Stroud and Seabrook, has set up offices in the old City Hall in National City and is about to proceed with the erection of its shipyard, with D. M. Callis, well-known naval architect, in charge of construction. During the previous war, two concrete steamers were built in National City, and one, at least, remains in service today as a fish reduction plant in San Francisco.

The five concrete oil barges to be built by this yard to the order of the Maritime Commission will not be self-propelled, but will have cargo oil pumps to handle the liquid cargoes. They will be 350 feet in length, with a beam of 54 feet, and will cost a total of $3,000,000.

Concrete ships of the past have demonstrated a certain measure of success, and modern and improved methods of reinforcing, cement gun application of material and recent discoveries in aggregates may result in fully successful carriers. While concrete will be the "binder" of the hull and the fore and aft and transverse bulkheads, steel will comprise about 60 per cent of the hull weight. This will be in the form of rods of plain round iron laid and interlaced to form girders of strength equal to full steel sections.

The loaded deadweight of a steel vessel, cargo type, consists of about 71 per cent cargo. That of a concrete ship, as heretofore built, consists of 54 per cent cargo, and that of the average wooden ship is 49 per cent cargo. Thus, it can be seen that the previous concrete ships have been able to carry more cargo than a wooden ship of the same dimensions and improvements in design may result in a greater increase in pay load.

Concrete hulls have been found to take up water to a slightly greater extent than wooden hulls but this also may be reduced with a cover coat of a close-textured cement compound applied with a cement gun. In place of the crushed stone aggregate, commonly used in concrete construction, it is understood that a light coke oven byproduct will be utilized. This will save many tons of weight without appreciable sacrifice in strength.

All Hands On Deck!

Out of the dim mists of half-forgotten windjammer days is recalled the sudden heavy drumming of a belaying pin on the forecastle companion slide, a dash of wind-blown spray as the slide is forced open, and, through the wild rush of the night-born squall, a hoarse, salty voice shouts, "All hands on deck! Shake a leg, you stiffs. On Deck!!" Then an hour's work fighting torn and flapping canvas, tearing out finger nails to get the sails furled on top of the heaving yards and snugging her down to ride out the fury of the gale.

The storm of war struck with a sudden and treacherous squall but all hands are again turned to, with all the will of a strong and united people, and the Ship of State is snugged down to ride out the storm and every man jack of the crew confident that she will. All the squabbles around the forecastle lamp are forgotten, and it's "all together now." We will have to bend our backs a little more and perhaps miss the mess call at times, but we will cinch up the soul and body lashing a little tighter, as get the ship through we must. must.

The Navy has practically taken over the Southern California ports and clamped down a rigorous control. Strange ships quietly slip into harbor, load or discharge cargoes and as quietly slip away again, and we are pledged not to reveal their identity or their movements and are gladly willing to comply. Weather reports are no longer available and the Southern California papers have suspended their "Embarcadero" sections. A marine Walter Winchell would be extremely unpopular during these times so we must cast our news along the lines prescribed for us.

Salvaged Vessel Burned

Tuna clippers returning from Puntarenas, Costa Rica, report that the German steamer Eisenach, set afire and scuttled by her crew in the harbor at Puntarenas last March 31, and which had been raised by Capt. Brown with the salvage tug Retriever, was again set afire while being prepared for the voyage, in tow, to San Pedro for repairs. The German crew was taken into custody and interned by the Costa Rican Government following the first fire, and it is not known whether they had any hand in the second fire, which is believed to be an act of sabotage. The full extent of the last fire is not definitely reported but the ship will be put in condition for the voyage north as soon as possible.

The returning fishermen also reported that many Japanese-owned stores in San Jose, Costa Rica, had been attacked and windows broken, fires set and stocks damaged. The port captain in Puntarenas, a German national, has been discharged, and almost every business house in Costa Rica is displaying a "V for Victory" emblem to indicate their pro-ally sympathy.

War and the Fishing Fleet

While there has been some upset in the activities of a few of the tuna fleet operating out of Southern California ports, they are, for the most part, going about business as usual. Insurance rates have taken an upward jump, and war risk is almost prohibitive which will force some of the boats, owned under bank mortgages, to curtail operations to the local banks north of Cape San Lucas. Eleven of the larger clippers have been temporarily taken over by the Navy while in tropical waters; will be taken to port; fish cargoes shipped north; and the boats outfitted for service as patrol boats.

The Italian crews of many of the small vessels have been severely reduced by the removal, on Federal order, of all men who failed to take out papers prior to the President's proclamation of a national emergency, and which men are not permitted to be employed in the vicinity of the waterfront. The crews of the larger tuna boats are mostly American citizens and their Portuguese crews are not being molested as their loyalty has never been questioned.

All Japanese are removed from the fleet, and one of the large tuna boats was found to have a Japanese radio operator. Harbor patrols at San Diego arrested thirteen Japanese crew men from two boats as the boats docked. Some Japanese have attempted to leave their boats in Mexican waters in the hope of avoiding arrest but were promptly jailed by Mexican authorities.

The sport fishing boats are allowed to continue in service and are reporting fair catches. One operator is sending out four boats a week to the Coronado Islands and reports the trips are being well patronized. The only restriction is a required stop on entering and leaving the harbor at the harbor customs station, recently set up at the harbor entrance.

Boat Yard Notes

The Robbins Marine Engine Works and the Harbor Boat Works of San Diego, both with three ways each, are being dismantled and new yards set up in the industrial area at the foot of Twenty-eighth Street. The Robbins plant will move their main buildings by barge down the bay to their new location in the early future, while the Harbor Boat Works has two ways in operation at their new plant. Both yards have planned increased facilities, and the Harbor Boat Works, builders of the Mexican patrol boat Halcon, are negotiating with that government for several additional contracts. The two yards were forced to give up their old locations to make way for the new Harbor Drive, to be built as a military road to shorten the shore distance between the city and Fort Rosecrans.

The San Diego Marine Construction Company is putting the finishing touches on the new all-welded steel barge for the Star and Crescent Boat Company. Built by the Dravo Company at their Neville Island, Pennsylvania, plant the barge was shipped knocked down, to Stockton, where it was reassembled and towed to San Diego for installation of cargo piping and pumps. It is 165 feet long, 35 feet beam and 10 feet deep, and will carry 9000 barrels in the Star and Crescent Company's service between San Pedro and San Diego. The San Diego Marine Construction Company is also building the wooden towboat San Miguel for the Star and Crescent Boat Company and which vessel will be used to tow the steel oil barge. In addition to the four Navy patrol boats, now well under way, they are also building a wooden ferryboat, the Star, for the Star and Crescent Boat Company. This boat is similar in design to the Vallejo-Mare Island ferries; is 65 feet in length, 18 feet beam, of 25 tons displacement; and will carry 185 passengers in the run between San Diego and North Island. A 100-hp Cummins diesel engine will drive her about eleven knots, and the boat is scheduled to enter service early in January.

Fishing vessel construction is practically at a standstill in San Diego, with one on the stocks at the Campbell yard, and one about to be launched at the Hollinger & Millikan yard. High costs and the difficulty in obtaining material has put a damper on new orders for the time being.

At the Frank Hodgson yard in Long Beach the 88-foot Viking is nearing completion; another of the same size is being framed; and materials are reported on hand for their completion. This yard recently completed the Monarch, after building the hull at their old plant on Terminal Island.

The Martinolich yard in San Diego has two tuna clippers, the Conte Grande and the St. Ann, being outfitted at their docks but lack machinery to complete them. The yard is busy with naval work and general repairs.

Personalities

Roland D. Horne, Coast and Geodetic Inspector for the Southern California District, has announced a new chart for San Diego Bay. Revisions have been made necessary by the many changes in topography by the amount of dredging and filling done in the bay and by the extensive alteration to the harbor entrance.

Joe Loperena, after a short career as an aircraft constructor, made necessary by the closing of the Quaker Line offices, has returned to his post as agent for the De La Rama Steamship Company and will handle the Quaker Line vessels as heretofore.

J. F. Davis, owner of the yacht Penguin, had a few bad hours recently. The yacht capsized off the Coronado Yacht Club and Mr. Davis and his guests were rescued by a naval patrol boat and the yacht towed to the Destroyer Base where she was tied up alongside some submarines. Here the crew of the patrol boat left them, and the yachtsmen calmly walked across the decks of the submarines on their way ashore. Approaching a guard to ask directions, they were promptly put under arrest as trespassers on Government property and vessels of the U. S. Navy. They finally managed to establish their identity as shipwrecked mariners and were allowed to go their way. As a sequel, it took special permission from Washington to get the Penguin away from the Destroyer Base and to her home moorings.

Abelardo Rodrigues, ex-president of Mexico, has bought the old San Francisco Bay ferry San Pablo and is converting her to a fish cannery, to be stationed at Guaymas.

A New Manual-Propeller Drive Device For Ships' Lifeboats

ONE OF 68 TREGONING lifeboats fitted with the Allen manual drive, being tested with capacity load on Puget Sound

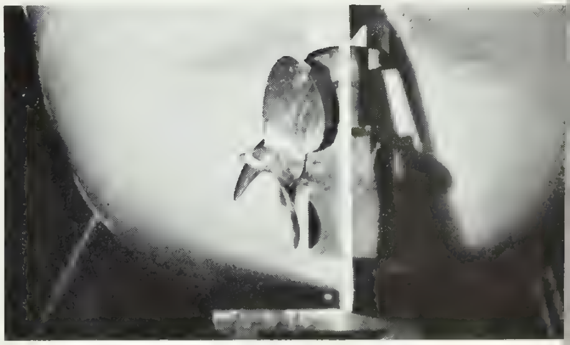
Nordhoff and Hall's novel of "Men Against the Sea" might have involved less hardship had the boat they were in been equipped with the new Allen manual propeller device which is being installed in 68 lifeboats now being built by the Tregoning Boat Co. for the Maritime Commission vessels building at the Tacoma yard of Seattle-Tacoma Shipbuilding Corp.

For these propeller devices, acting also as rudders, are not operated by clumsy, space-taking, back-breaking oars, even though manually handled. Each device consists of from four to eighteen offset handles mounted on a fore and aft shaft which in turn operates through roller chain, transmitting power to a vertical shaft which in turn transmits through double gears to a propeller shaft. The reason why no rudder is required is that the propeller swings 360 degrees either direction, making it much more effective for steering than a rudder, as both steerage and steerage way are maintained by the propeller sideways, astern or ahead.

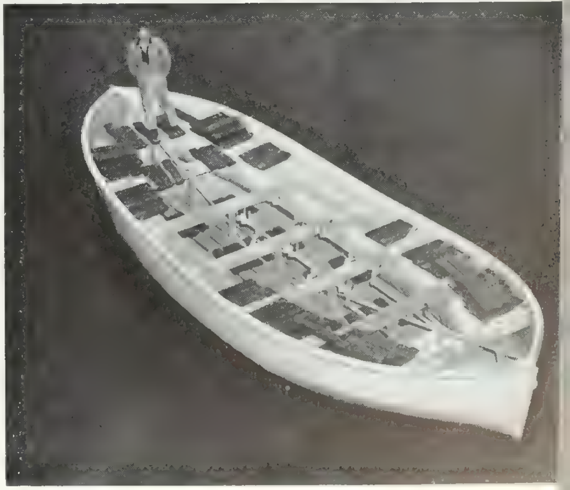
The propeller position is determined from an indicator handle located just forward of the steering lever, mounted at the rear end of the unit. The units being installed at the Tregoning plant are the first installation made commercially and on tests made at Seattle have lived up to expectation in every way. Eighteen men can be working on the handles at one time and nine are sufficient to give the boat good headway. The maximum stroke is 32 inches and at 30 manual strokes per minute, a propeller revolution is given of 270 rpm, which in tests so far made drives the boat at over 4 mph. This speed is obtained with full complement of men and completely loaded with standard equipment and supplies.

The Allen manual propeller device was invented by C. W. Allen, who is also patentee, but exclusive rights to its production are held by Bernhard Kilian of the Pitchometer Propeller Co., 2020 Chestnut Street, Alameda, California, long known as manufacturers and correctors of propeller wheels of all types. Mr. Kilian was in Seattle recently witnessing the installation and test of his propeller device and was well satisfied with the results. The entire unit is built of bronze; all gears run in a bath of oil. Ball-bearings are used throughout, making for greatest ease of operation.

The Allen manual propeller device is suited not only to the new types of lifeboats in which they are now being installed, but also to the old, conventional shaft-log type, both having been approved by the Bureau of Marine Inspection and Navigation. At the time this is written, in addition to the 68 propellers on order, 34 more are committed and the manufacturers have received inquiries from all parts of the country.



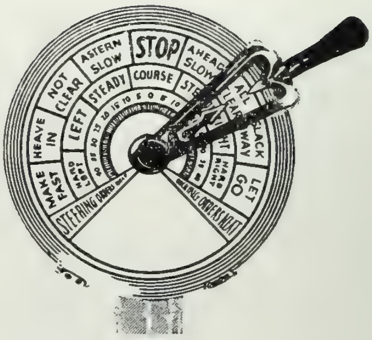
VIEW FEATURING the propeller turned at 90° to port. This shows flexibility of device for steering purposes



BIRD'S-EYE VIEW of boat showing the rods and handles that drive the vertical propeller shaft

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

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RULES OF THE ROAD

III (continued) SOUND SIGNALS FOR VESSELS IN FOG AND NOT IN SIGHT OF EACH OTHER

Notes and General Comment Table "B"

It is to be noted that Article 15 of the International Rules requires the foghorn to be mechanically operated; the same article of the Inland Rules permits the foghorn to be sounded by the breath. Sailing vessels especially have been often found at fault under the International Rules for using foghorns operated by the breath.

The two-minute interval of the International Rules and the one-minute interval of the Inland Rules, as prescribed in Article 15, must be regarded as the maximum interval allowed; when existing circumstances require it the signals should be given at shorter intervals. The two-blast signal, for a steamer under way but stopped and having no way upon her, is found only in the International Rules and cannot be used in the inland waters of the United States. This two-blast signal cannot be used at sea until the vessel is absolutely still in the water; the mere stopping of the engines is not sufficient. If the vessel is moving either ahead or astern while obscured by fog, she can use only the one-blast signal, as described in Article 15 (a). Should doubt exist on a dark night, a piece of white paper or rag should be dropped overboard to determine whether or not the vessel has movement through the water.

A careful reading and study of Article 15 (e) reveals the fact that under the International Rules the towing signal is made by either a steam or sailing vessel when engaged in towing; but, under the Inland Rules, it is prescribed only for a steam vessel towing. Therefore, a sailing vessel engaged in towing under the Inland Rules would sound the signal for the tack she is sailing on, as prescribed by Article 15 (c). The signal to be sounded by the vessel being towed was made optional because of the fact that many tows are not manned, and also because in very busy harbors if all vessels being towed were required to sound the signal, it would cause pandemonium. However, should the vessel being towed decide to use the signal, it *must be* given on the foghorn.

Vessel Not Under Command

For a vessel not under command on the high seas, the signal of one prolonged and two short blasts is to be used either as substitute for the one prolonged blast, as prescribed in Article 15 (a) for steam vessels; or as a substitute for the signals as prescribed in Article 15 (c) for sailing vessels. It is not a substitute for the signal of two prolonged blasts prescribed in Article 15 (b). Should a steam vessel that is broken down on the high seas lose all headway and come to a standstill while under way, she would sound the two-blast signal prescribed in Article 15 (b).

A sailing vessel becalmed under International Rules will sound the "not under command" signals as prescribed in Article 15 (e); but, if under Inland Rules, where such a signal is not authorized, she would use the signals for the tack she is sailing on, as prescribed in Article 15 (c).

Steam vessels under way but not under control and obscured by fog in the inland waters of the United States would sound the one-blast signal, as prescribed in Article 15 (b), and the vessel's helplessness could be made known to an approaching vessel by timely use of the danger signal.

Vessels at Anchor

A vessel at anchor will use the same signal under both the International and the Inland Rules; namely, a rapid ringing of the ship's bell for about five seconds at one-minute intervals. It is to be noted that should vessels be nested at anchor, then each vessel in the group must sound the fog signal for a vessel at anchor.

A vessel aground in or near a fairway is not a vessel "at anchor" so far as fog signals are concerned; the courts have ruled that the proper signal is distress or danger signals. The logic applied is that should the vessel aground give the regular "at anchor" signal, an approaching vessel would assume that she was in a safe anchorage, and that vessel may attempt to pass closely and she, too, would go aground.

Use of the Whistle When at Anchor

The question has been raised whether a steamship at anchor is justified in sounding her whistle under any circumstances. In certain conditions of the atmosphere, an approaching vessel may be unable to see another vessel at anchor, though visible herself from the latter's deck; and a violent blast of the whistle or siren might attract attention, when the ship's bell had not been heard. Under such exceptional circumstances, a blast of the whistle would probably be held to be justified by the General Prudential Rule, Article 27. However, this signal should be used only in cases of necessity; it should be noted that no amount of noise, such as hammering, drilling, etc., can ever be a legal substitute for the prescribed "at anchor" signal.

An interesting and important addition to the "at anchor" signal is to be found in the Western River Rules and applies to vessels anchored in fog on rivers whose waters flow into the Gulf of Mexico; i. e., when any sound is heard indicating the approach of another steamer, a steamer anchored on the right bank shall give one tap on her bell; if on the left bank, two taps of the bell, at intervals of not more than one minute. These signals are in addition to the regular "at anchor" signal and will indicate which bank of the river the vessel is anchored on. Right or left bank is ascertained by facing downstream.

TABLE B
SOUND SIGNALS FOR VESSELS NOT IN SIGHT OF EACH OTHER WHILE OBSCURED IN FOG

All blasts to be sounded on the whistle or siren by steamers, and on the FOG HORN by SAILING VESSELS and VESSELS IN TOW

Symbols ****** ship's bell
—— prolonged blast (4- to 6-seconds duration)
— short blast (about one-second duration)

Type of Vessel	*International Rules*		*Inland or Pilot Rules*		*Article*
	Signal	*Maximum Interval*	*Signal*	*Maximum Interval*	
Steam vessel under way with way upon her	——	2 mins.	——	1 min.	15, a
Steam vessel under way, but stopped and having no way upon her	—— ——	2 mins.	——	1 min.	15, b
Vessel towing	—— — —	2 mins.	—— — — (steam vessel only)	1 min.	15, e
Vessel being towed	—— — — (optional)	2 mins.	—— — — (optional)	1 min.	15, e
Vessel not under command	—— — —	2 mins.	——	1 min.	15, e
Vessel working with submarine cable	—— — —	2 mins.	——	1 min.	15, e
Vessel at anchor	******	1 min.	******	1 min.	15, d
Vessels fishing (over 20 tons gross) while under way	—— ******	1 min.	Signal for vessel of her type		9, i
Sailing vessel on starboard tack	—	1 min.	—	1 min.	15, c
Sailing vessel on port tack	— —	1 min.	— —	1 min	15, c
Sailing vessel with wind abaft the beam	— — —	1 min.	— — —	1 min.	15, c
Any steam vessel which does not understand or cannot comply with the course or intention of another steam vessel	Omitted.		— — — — (not less than four) DANGER SIGNAL		18 Rule 3 Rule 8

TABLE C
SOUND SIGNALS FOR STEAM VESSELS NOT IN SIGHT OF EACH OTHER IN CLEAR WEATHER

Type of Vessel	*Signal*	*Meaning*	*Article*
Steam vessel leaving a slip	One long blast (10 to 12 seconds)	Warning to other vessels that are not in sight	Inland Rules, Article 18, Rule 5
Steam vessel within one-half mile of bend in a river	One long blast (10 to 12 seconds)	Warning to other vessels that are not in sight	Inland Rules, Article 18, Rule 5

Fishing Vessels

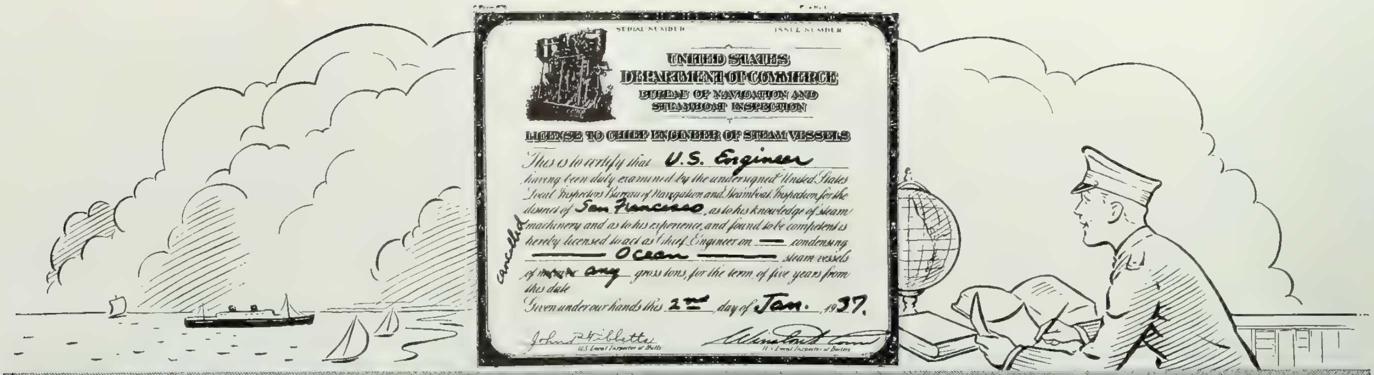
Any vessel of over 20 tons gross, engaged in fishing and obscured by fog while under way on waters where the International Rules govern shall sound, if a steamer, one blast upon the whistle; or, if a sailing vessel, one blast upon the foghorn, each blast to be followed by ringing the bell. Should a fishing vessel become stationary by reason of her gear getting fast on the bottom, she is then at anchor and shall sound only the "at anchor" signal, prescribed by Article 15 (d); namely, a rapid ringing of the ship's bell for about five seconds with one-minute intervals between groups.

The Inland Rules provide no special fog signals for fishing vessels; therefore, they always use the signals for vessels of their class, as prescribed in Article 15 of the Inland Rules.

Sailing Vessels

A sailing vessel is on the port tack when the wind is abeam or forward of

(Page 104, please)



SERIAL NUMBER ISSUE NUMBER

UNITED STATES
DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION AND
STEAMBOAT INSPECTION

LICENSE TO CHIEF ENGINEER OF STEAM VESSELS

This is to certify that U.S. Engineer having been duly examined by the undersigned United States Local Inspectors Bureau of Navigation and Steamboat Inspection for the district of San Francisco, as to his knowledge of steam machinery and as to his experience, and found to be competent is hereby licensed to act as Chief Engineer on — condensing — Ocean — steam vessels of any gross tons, for the term of five years from this date

Given under our hands this 2nd day of Jan. 1937.

Cancelled

John P. Tibbetts
U.S. Local Inspector of Hulls

U.S. Local Inspector of Boilers

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ENGINEERING THERMODYNAMICS

GASES AS AFFECTED BY HEAT

It is the fundamental and extremely interesting phenomena concerning the relations of heat and gases which give us our power under control from nature's storehouse of energy. "The Chief" ventures to make this statement: That without our ability to add to and withdraw heat from gases, we would not be able to utilize fuel as a source of mechanical power. That is, the expansion and contraction of gases with changes in heat content is our sole method of converting heat to mechanical motion.

This is just as important and basic in the heat-motion cycle as is Faraday's principal of induction in the relation of electric current and magnetisms without which we would not be able to generate electric power and have the motion—electricity phenomenon. Combining the two, we have the heat-motion—electricity principal, so widely used.

Hence a study of gases, and their pressure, volume, temperature characteristics together with the work-energy principles, is vitally important to engineers. This and several future articles will be devoted to this phase of the general subject of thermodynamics.

Vapors and Gases

Engineers must make a distinction between a gas and a vapor. A gas is a substance in the gaseous state. When pressures are increased and temperatures are reduced so that gases approach the liquid state, they approach the "dew" point or condensation point. In this nearness to a liquid, the gas may be partly vapor or fog.

Superheated steam is a gas, invisible like air. Dry saturated steam is partly a vapor, partly a gas. Saturated steam is a vapor with droplets of water or fog. Unless superheated, steam at its best is never more than 98% gas and vapor, the remainder water.

A perfect gas follows the general gas laws as will be discussed here. If too close to dew point, it becomes an imperfect gas and may not follow them exactly. This lack of exactness in imperfect gases is taken care of in engineering data on gases such as the steam tables.

The three great physical laws of gases are referred to under the names of their discoverers, as follows:

Boyle's Law

Boyle's Law states: "If the temperatures of a given weight of gas are kept constant, the absolute pressure of the gas will vary inversely as its volume, and the volume will vary inversely as the absolute pressure."

The formula is: $\frac{P_1}{P_2} = \frac{V_2}{V_1}$

When P_1 is initial pressure, absolute, P_2 is final pressure, absolute; V_1 is initial volume; and V_2 is the final volume.

This means simply that, if we compress a gas and allow it to cool to original temperature, the new pressure will be as much greater as the new volume is smaller.

Charles's Law

Charles's Law states: "If a given weight of any gas is confined in a mixed volume, and its pressure is measured while the gas is at 32° F., it will be found that its absolute pressure will increase $\frac{1}{492}$ for each 1° F. that its temperature is increased; or, its absolute pressure will decrease $\frac{1}{492}$ for each 1° F. that its temperature is decreased.

Formula:

$$P_t = P_{32}\left[1 + \frac{1}{492}(T-32)\right]$$

where P_t is absolute pressure at any given temperature T, and P_{32} is pressure, absolute, at 32° F.

Gay-Lussac's Law

And finally, Gay-Lussac's Law says: "If a given weight of any gas be so confined that its volume and temperature can be varied while its pressure remains constant, it is found that the volume increases $\frac{1}{492}$ of the volume at 32° F. for each 1° F. increase in its temperature; likewise, the volume of the gas decreases $\frac{1}{492}$ of its volume at 32° F. for every 1° F. decrease in its temperature.

Formula:

$$V_t = V_{32}\left[1 + \frac{1}{492}(T - 32)\right]$$

where V_t is volume at any temperature T; and V is volume at 32° F.

These three laws govern the behavior of gases under: (1) constant temperature, (2) constant volume, and (3) constant pressure.

The discovery of these laws led to a determination of the value of the absolute zero of temperature —460° F. or 492° below freezing water on the Fahrenheit scale. Note that if the volume were 492 cubic inches and the temperature 32° F.; then, in order to hold the pressure constant as we lowered the temperature, we would reduce the volume by 1 cubic inch for each degree of temperature drop, until we reached zero volume, at which we would be at zero temperature on the absolute scale, below which it is inconceivable of ever going.

These three laws may be combined into the general gas law which may be expressed by this formula:

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

And transposing, we have:

$$P_2 = \frac{P_1V_1T_2}{V_2T_1}$$

$$\text{and } V_2 = \frac{P_1V_1T_2}{P_2T_1}$$

$$\text{and } T_2 = \frac{P_2V_2T_1}{P_1V_1}$$

where P, V and T are respectively the absolute pressure, volume and absolute temperature, and the sub numerals 1 and 2 respectively represent the initial condition, at the start of a change, and the final condition after the change.

These laws apply to nearly all engineering power problems. An example of their application is as follows:

A gas engine takes in a charge of gas and compresses it to one-sixth of its original volume. The original temperature was 70° F. The pressure compressed is 145.3 lbs. per sq. in. gage. What is the temperature?

Solution: T_2 is the unknown.
$T_1 = 70 + 460 = 530°$F. $P_1 = 14.7$ lbs.
$P_2 = 145.3 + 14.7 = 160$ lbs. per sq. in.
$V_1 = 6$; and $V_2 = 1$
substituting values in the formula for T_2 we have $530 \times 160 \times 1$ divided by $14.7 \times 6 = 961°$ F. absolute.
$961 - 460 = 501°$ F. Answer.

Also, suppose the charge of gas in this engine is now ignited and reaches a temperature of 3258° F. before the piston moves downward. What is the Pressure?

Solution: P_2 is the unknown.
$V_1 = 6$; $V_2 = 1$; $T_1 = 530°$ F. absolute.
$T_2 = 3258 + 460 = 3718°$ F. absolute.
Substituting these values in the formula for P_2, we have $14.7 \times 6 \times 3718$ divided by $1 \times 530 = 618.7$ lbs. per sq. in. absolute.
$618.7 - 14.7 = 604$ lbs. on gage.

And, finally, suppose the piston now travels downward to the end of its stroke. Here, the exhaust pressure is 40 lbs. per sq. in. absolute. What is its temperature?

Solution: Here T_2 is the unknown.
$P = 40$ lbs.; $V_2 = 6$; $T_1 = 3718$;
$P_1 = 618.7$; and $V_1 = 1$.

Substituting in formula for T_2, we have $40 \times 6 \times 3718$ divided by $618.7 \times 1 = 1442°$ F. absolute.

Note that no mention of heat or energy was made in the foregoing.

Our next article will discuss the generalization of these laws as applied to various weights of gases and different kinds of gases.

Simple Cure

FOR OIL IN BOILER FEED

Condensed exhaust from reciprocating engines and pumps is frequently wasted because it is contaminated by oil or grease. Oily condensate, if used for boiler feeding, is frequently the cause of serious operating troubles, including:

1. Foaming and priming
2. Overheating of boiler tubes
3. Corrosion.

Analysis of Scale from Steam Space of Boiler

	Per Cent
Oil	20.0
Silica	4.0
Iron Oxide	8.2
Calcium Carbonate	62.8
Magnesium Carbonate	4.4
	99.4

Oil is also carried over with sludge from the boiler water into the turbines and, becoming cooler as a result of the steam doing work, congeals and acts as a binder for other substances brought over by priming.

Analysis of Scale Deposited by Steam in Turbine

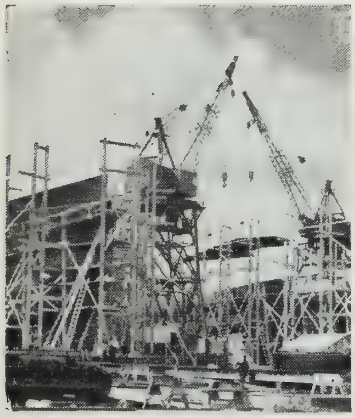
	Per Cent
Oil	24.88
Silica	13.80
Iron and Alumina	6.19
Calcium Sulphate	0.03
Calcium Carbonate	55.10

Coagulation

Oil that exists in emulsion or a fine state of division must be coagulated prior to removal by filtration, and for this aluminum sulphate and caustic soda are used. Before entering, the filters the condensate is given a treatment of approximately one grain of aluminum sulphate and ½ grain of caustic soda per gallon. The resultant aluminum hydrate precipitate forms a flock which coagulates the finely divided oil particles, thus holding the oil on the surface of the filter bed.

Operation

The operation of the filter is very simple. The contaminated water enters the filter at the top and leaves from the lower connection. The entering water passes through the adjustable orifice, which causes sufficient resistance to shunt a small proportional amount of water through the coagulant tank, wherein it becomes saturated with alum and delivers alum to the filter side of the orifice at a rate proportional to the rate of flow through the adjustable orifice. When using sufficient coagulant, the filter bed retains the suspended matter at its surface and permits only a crystal clear water to pass through. When the pressure loss through the filter bed becomes excessive, the filter should be cut out of service and back-washed.



On the Ways -

SHIPS IN THE MAKING

LATEST NEWS FROM AMERICAN SHIPYARDS

Sperry Launched At Mare Island

The name of one of America's foremost inventors was given to the submarine tender which was launched at the Mare Island Navy Yard, Wednesday, December 17.

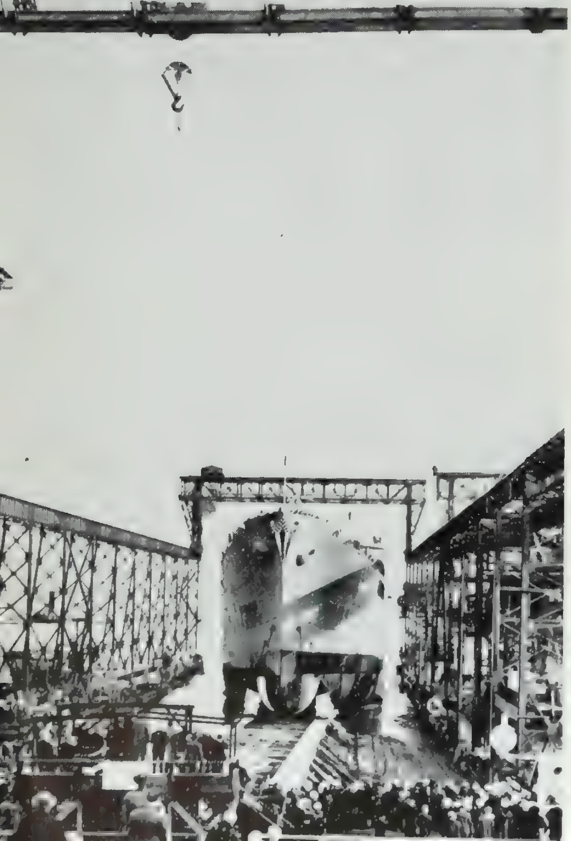
This ship is now the Sperry, named for the late Elmer Ambrose Sperry, best known for his development of the gyro-compass. She will displace more than 9000 tons, and is the second of five submarine tenders being constructed at Mare Island. The first of these was the Fulton, commissioned September 12; the keel of the third, to be named Bushnell, was laid down a few days after the Sperry's launching.

Sponsor of the Sperry was Mrs. Robert B. Lea, a daughter of Mr. Sperry.

The Sperry's keel was laid February 1, 1941, and her now estimated completion date, July, 1942, will be many months ahead of the contract schedule.

Selection of this name for a submarine tender is considered particularly appropriate, because of contributions to the science of submarine warfare.

The Sperry gyro-compass was first installed on the battleship Delaware in 1911, and has since entirely superseded the magnetic compass on submarines and battleships. He developed also gyro controls for marine and aerial torpedoes.



Below: Mrs. Robert B. Lea gives her father's name to the new ship, with Miss Margo Jean, maid of honor; Rear Admiral W. L. Freidell and Governor C. L. Olson looking on

Left: The Sperry slides down ways at Mare Island Navy Yard

Sparrows Point Launches S. S. Calusa

A 12:00 a.m., November 12, the S. S. Calusa, latest addition to the fleet of Socony-Vacuum Oil Company, slid down the ways at the Sparrows Point, Maryland, Yard of Bethlehem Steel Company. She was named for a director of Socony-Vacuum, and Mrs. Laurence B. Levi, his wife, was the sponsor. Two sister ships, the Corsicana and the Caddo, were launched on April 19 and July 1, respectively. Three more tankers of the same design are being built for Socony-Vacuum at Sparrows Point.

Calusa has a deadweight of 16,000 tons and a tank capacity of 129,000 barrels, or 5,418,000 gallons of oil. The cargo space is divided into 24 compartments, allowing many different grades of oil to be carried at one time. Pumping capacity is designed to load or unload the vessel in about 16 hours.

The principal dimensions of the Calusa are as follows:

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Length, overall, 501 ft. 4½ in.
Breadth, molded, 68 ft.
Depth, molded, 37 ft.
Draft, loaded, 29 ft. 8½ in.

Launching Ceremonies To Be Discontinued

Formal launching ceremonies for merchant ships being constructed for the United States Maritime Commission have been ordered discontinued as a war-time measure, it was announced by the Commission December 15. Although there may be the traditional christenings of vessels, the Commission announcement stated, they will be simple and informal, and no reimbursement will be allowed shipbuilders for any expense incurred in connection with launchings.

Trial Trip S. S. African Comet

The S. S. African Comet, built by The Ingalls Shipbuilding Corporation at its Pascagoula, Mississippi, yard, recently completed a successful trial trip in the Gulf of Mexico. Her sister ships, the African Meteor and the African Planet, have been launched and are now outfitting.

These three vessels are the first and largest all-welded combination cargo-passenger liners in the world, having the same size specifications throughout and differing only in interior decoration. They have been constructed with the utmost regard for comfort and safety and represent the most advanced study in naval architecture.

The ships were planned to ply a direct route of 16½ days between New York City and South and East Africa. Their dimensions are as follows:

Displacement	17,000 tons
Gross tons	9,000
Length	489 feet
Breadth	69 feet
Depth	42 feet
Passenger accommodation	116

UPPER LEFT: Tanker Calusa slides down ways at Sparrows Point, Md.

AT RIGHT: S. S. African Comet, after her successful sea trials

UNION OIL TANKER A. C. RUBEL, just after launching at Sparrows Point

Sparrows Point Launches A. C. Rubel

An important addition was made to the rapidly growing fleet of American tankers when the A. C. Rubel was launched Nov. 10 at the Sparrows Point Yard of Bethlehem Steel Company, Shipbuilding Division. The new vessel, the keel of which was laid on June 18, 1941, is being built for the Union Oil Company of California, and will be used in regular service on the Pacific Coast. She is named for a vice president of Union Oil, and Mrs. Albert C. Rubel, his wife, acted as sponsor.

The fourth tanker built for Union Oil at the Sparrows Point Yard, she has a deadweight of about 13,000 tons and a tank capacity of 103,445 barrels, or 4,344,690 gallons of oil. The cargo tank space is divided into 24 compartments, allowing many grades of oil to be carried at one time. Pumping capacity is designed to load or unload the vessel in less than 12 hours.

The principal dimensions are as follows:

Length overall, 463 feet.
Molded beam, 64 feet.
Molded depth, 34 ft. 10 in.
Draft, 28 ft. 6 in.
Speed, 13 knots.

Two water tube boilers supply steam at 450 psi to a cross-compound, double-reduction gear Bethlehem turbine, developing 3500 shp and driving the single screw.

Diesel Engine Plant Working at Capacity

B. B. Williams, president of The Cooper-Bessemer Corp., with plants at Mount Vernon, Ohio, and at Grove City, Pa., declares that the record rate at which his company now is making engines for the Navy, Maritime Commission and the nation's defense plants, "is not enough, in view of America's needs for war materials."

He urges immediate increases in production from renewed efforts of executives, office force, shop men, foundrymen and field men because better use of existing equipment affords the only answer to immediate demands for still greater production.

"The declaration of war by the United States on Japan, following attacks upon our possessions in the Pacific, places the Cooper-Bessemer Corporation on approximately a 99 per cent rearmament basis.

"Our 1941 production was about 70 per cent higher than the 'normal' year of 1940.

"But this is not enough. America needs materials, and more materials.

"In view of the highly mechanized type of war being waged throughout the world today, we need 18 men in the factories for each man assigned to the fighting forces.

"In addition to speeding up production all around, we are taking steps to protect our plant against sabotage by expanding and changing our police force. Nothing must stop the production of machines for the defense of America."

Employment at the Cooper-Bessemer Corporation has increased to an all-time high, under pressure of the war effort. There are 1135 employees at the Mount Vernon plant, and 2085 workers at Grove City.

At present, plants and equipment virtually at capacity, with three eight-hour shifts, six days a week. More than $1,000,000 was spent last year on new buildings and equipment at the two plants.

Commission Contracts For 9 More Tugs

Contracts for nine seagoing tugboats to cost slightly in excess of $1,000,000 each have been made with two shipyards, it was announced by the Maritime Commission on November 29. The Globe Shipbuilding Company, Superior, Wisconsin, will build five, and the Avondale Marine Ways, Inc., New Orleans, Louisiana, four.

This makes a total of 13 of this type vessel thus far ordered by the Commission. Deliveries are to be made between July and November, 1942.

These tugs, known as design V4-M-A1, are the largest commercial vessels of their type, having an overall length of 194 ft. 9 in., with a molded breadth of 37 ft. 6 in. and a designed draft of 15 ft. 6 in., geared diesel-propelled with 2250 hp.

The other four are being built by Froemming Brothers, Inc., Milwaukee.

Contracts Let On Small-Ship Program

Contracts for construction of 12 coastal tankers and four seagoing tugs were announced by the United States Maritime Commission. The vessels, to cost approximately $11,000,000, will be built by three shipbuilding companies and are a part of the Commission's secondary or small-ship program.

Eight of the coastal tanker vessels will be built by the **Barnes-Duluth Shipbuilding Company,** of Duluth, Minnesota, scheduled for delivery between June 1 and October 20, 1942.

The other four tankers will be constructed by the **Lancaster Iron Works**, of Lancaster, Pennsylvania, to be delivered between July 1 and October 1, 1942. The concern will fabricate the steel work at its Lancaster plant and construct the vessels at its shipyard, Perryville, Maryland.

The four seagoing tugs will be constructed by **Froemming Bros., Inc.,** of Milwaukee, Wisconsin, to be delivered between August 1 and October 29, 1942.

The tankers will be 212 feet long, have a 37-foot beam and 12-foot draft. They will have direct diesel propulsion, and a cargo capacity of 12,660 barrels.

Of new design, the seagoing tugs, largest commercial vessels of their

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GENERAL ENGINEERING and DRY DOCK COMPANY

type, will have a length of 194 feet 9 inches, breadth of 27 feet, and draft of 15 feet 6 inches. Diesel propelled, each tug can generate 2250 horsepower.

Bethlehem-Fairfield Delivers First Ship

On December 30, the Patrick Henry, first of more than 300 "Liberty Ships" being built under the U. S. Maritime Commission's augmented shipbuilding program, satisfactorily completed her trial runs under the direction of the Commission's trial board.

Built in less than eight months by the Bethlehem-Fairfield Shipbuilding Company of Baltimore, the performance of the new cargo vessel was entirely satisfactory. Trials were held in Chesapeake Bay.

With an overall length of 441 feet 6 inches, a beam of 57 feet, a depth of 37 feet 4 inches, and a total displacement of 14,100 tons, the Patrick Henry will carry a general cargo of 9146 tons.

The keel of this vessel was laid April 30, 1941, and she was launched four months and 27 days later on September 27, when 14 new United States merchant ships slid down the ways at the rate of one an hour on "Liberty Fleet Day."

Richmond Shipyard Launches First Ship

The Richmond Shipbuilding Corporation on December 31 launched its first hull with appropriate ceremonies and before a large audience. Keel for this vessel had been laid September 17, as described in the October issue of PACIFIC MARINE REVIEW.

A very beautiful and capacious launching stand, designed in panels for easy erection and moving in sections, was used at this launching. This stand is painted in white and blue, has a capacity to seat 200 persons, and is surmounted by a beautiful blue canvas awning.

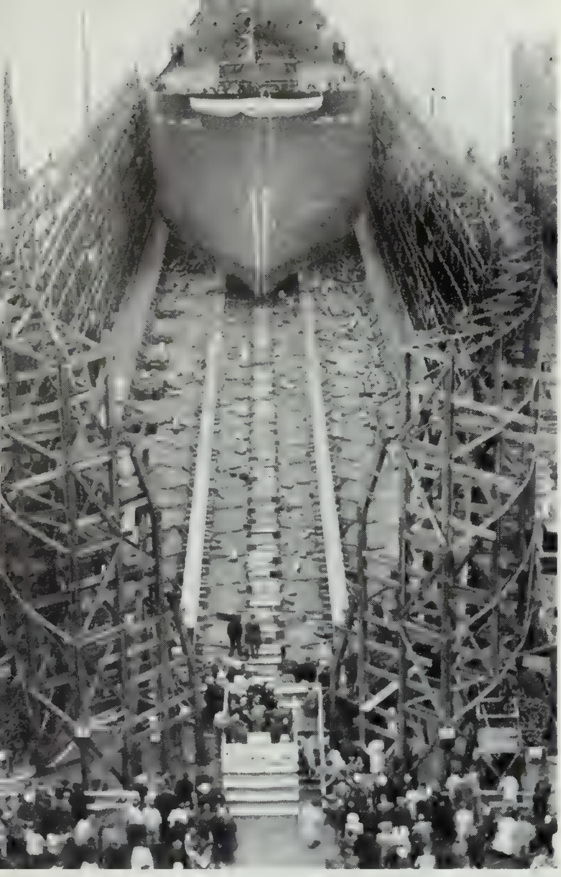
The ceremonies began at 10:00 a.m. with an invocation by Captain Chas. V. Ellis, U. S. Naval chaplain from Mare Island Navy Yard.

C. P. Bedford, general manager of Richmond Shipbuilding Corporation, made a few introductory remarks and then introduced the city attorney of Richmond, Thomas Carlson, who made a strong statement covering the important part that shipyard labor has in helping to win the war. Bedford then introduced Rear Admiral William H. Shea, U. S. C. G., who spoke briefly about the importance of merchant ships as a second naval defense line.

Mr. James Otis, well-known retired shipping man of San Francisco and great-grandson of the American revolutionary leader, whose name this ship bears, was present and was given a great ovation by the spectators.

The sponsor, Mrs. John Casserly, and her matron of honor Mrs. Michael Casserly, were each presented with flowers, and the ship, ready on schedule to the minute, was christened James Otis and slid gracefully down the ways into the waters of Richmond's inner harbor.

The day was crystal clear California sunshine. The program and the



MRS. FLETCHER BOWRON, wife of the Mayor of Los Angeles, christens the John Paul Jones on December 3. Looking on are John A. McCone, Mrs. Elliot Craig, matron of honor, and Mayor Bowron. At left: The ship is shown as she enters water

launching were timed exactly. Every detail was executed with precision for a perfect launching.

It is interesting that Mrs. John Casserly, sponsor, is a granddaughter of Henry T. Scott, one of the promoters and the president of the Union Iron Works of San Francisco, pioneer steel shipbuilding establishment on the Pacific Coast.

Richmond Shipbuilding Corporation expects to average a launching every ten days, and will soon be delivering finished steamers at approximately that rate.

Tacoma Yard Launches New Transport

Closing a year of notable construction records, the Tacoma plant of the Seattle-Tacoma Shipbuilding Corp., with brief ceremony, launched on December 30 the James O'Hara, 17,600-ton Army transport, the second of her type launched by this yard in three months.

Sponsor of the vessel was Miss Anne S. Denny, great-great-granddaughter of the Revolutionary War officer, after whom the vessel was named. James O'Hara was the first quartermaster General of the U. S. Army, named by George Washington in 1792. Emigrating from Ireland, where he was born, he volunteered as a private in the Colonial forces in 1776.

This vessel is the eighth of the Maritime Commission "C" series to be launched by the Tacoma yard. Her hull is of the welded C-3 type. She is powered with steam double-reduction geared turbines, is 491 feet long, 70 feet beam and has a gross tonnage of 7773.

Tacoma Has Quadruple Launching

The city of Tacoma, as a shipbuilding center, holds several distinctions, and one of these is that she is the first in the country to produce the YMS type of wooden mine sweepers, a type with which Tacoma is very familiar because it resembles so closely the hundreds of fishing vessels which have been built there. To celebrate and emphasize this fact, she held on December 18, a quadruple launching event, launching four of these mine sweepers from three yards in one afternoon.

The vessels and their builders and sponsors were as follows:

YMS-133, Western Boatbuilding Co., Miss Sandra Justice; YMS-125, J. M. Martinac Co., Miss Sheila Carlson; YMS-129 and YMS-130, Tacoma Boatbuilding Co., Miss Virginia Mojean, and Jean and Ruth Strom.

Propulsion Machinery For 35 New Tankers

Construction has been started on a $13,000,000 order for turbine electric propulsion units to drive 35 U. S. Maritime Commission tankers, according to R. A. McCarty, Westinghouse vice president. The equipment is being manufactured in the company's South Philadelphia and East Pittsburgh works. The new tankers, which will each carry approximately 140,000 barrels of oil, are an important part of the Maritime Commission's National Defense Shipbuilding Program. Sun Shipbuilding and Dry Dock Company will build these tankers at Chester, Pa.

In order to hasten deliveries, the new tanker propulsion units will not include speed reduction gears, which usually are a part of ship machinery. Each tanker will be driven by a 6600-hp electric motor, using power produced by a turbo-generator. The turbo-generator will operate at a high speed, most economical for such machines. The motor, however, will rotate at a much lower speed, around 93 revolutions per minute, the most economical propeller speed.

The South Philadelphia plant is now at work on geared turbine propulsion equipment for other tankers, which will be among the fastest ships of their type yet designed. They will be able to meet the requirements of speedy Navy fighting ships, if called for emergency duty. Westinghouse merchant marine orders also include equipment for Maritime Commission cargo ships and Great Lakes ore carriers.

SAFETY ENGINEERING PAYS

AS PROVED BY THE RECORD OF A SHIPBUILDING PLANT

by Edw. R. Bosley

Director of Public Relations, Consolidated Steel Corporation

"Tin Hats" is the rule in Consolidated yards

With the vast numbers of comparatively "green" men who are entering the shipbuilding industry because of the unparalleled demands of National Defense production, the profession of safety engineering is burdened with a greater task than ever before.

Consolidated Steel Corporation, Ltd., of Los Angeles, California, ever since its founding in 1928, has recognized the need of proper safety engineering to protect its workmen, and its efforts in this direction have been so successful that the company now has the best safety record of any concern on the West Coast.

The basic purpose of safety engineering is, obviously, to reduce accidents to an absolute minimum. A company's management must be convinced 100 per cent on the necessity of a safety program if such as program is to succeed. From then on, the best approach to the problem is explained by Allen A. McGaha, Consolidated's chief safety engineer, who has had 21 years of experience in this work. "The wise safety engineer fully realizes that you cannot *force* a safety program on a company's employees. Such a program, rather, must be *sold* to the men. To make a good safety engineer, you must be a top salesman." Evidence of Mr. McGaha's selling ability is shown by the fact that Consolidated in October had an accident frequency rate of only .148 per cent, based upon 280,400 man hours. Furthermore, the severity rate was only 3.84 per cent. Consolidated has had only two accidental deaths in the entire period from 1932 until the present, and there have been no disabling head injuries whatsoever, either at Consolidated's Maywood fabrication plant or at the shipyards. This is due, principally, to the fact that it is obligatory for workmen to wear protective hats made of aluminum alloy.

Don't Let An Eye Accident Cut YOUR Time and Pay...
WEAR YOUR GOGGLES

Posters like this, prominently displayed, preach safety to the worker

How is an enviable record like this achieved?

First, by sound organization of safety committees and sub-committees. In the case of Consolidated, Mr. McGaha presides at weekly meetings of the Company's Safety Committee, which is composed of eleven men—one from each shop in the plant. At these meetings, current problems are discussed, and each member makes rec-

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ommendations concerning importance of workers' safeguards in his own particular section.

For instance:

One committeeman will suggest that the burning rack at the west end of the receiving yard needs more light for the night shift.

Another will report that, at the west end of the ship fabricating shop, three switch boxes were temporarily blocked by material.

Another will casually mention that there is too much "horse play" in a certain section of the plant during noon hours. This remark elicits the valuable information that the Industrial Commission regards "horse play" in the shop to be such a dangerous hazard that it (the Commission) refuses to accept as compensable an injury resulting from a "horse play" accident.

All this interchange of ideas results in a sound coordination of safety efforts and immediate action taken on the problems brought up before the committee.

Besides the discussions, motion pictures are shown, which disclose how other plants have tackled some specific angle of workmen's protection. These movies may be obtained from the National Safety Congress in Chicago. They carry titles such as "The Eyes Have It," "Tools," and "Safety Shoes." Similar meetings are held in Consolidated's other plants.

Second. A rigid routine of plant inspection is carried out twice a day.

Third. The employees are continually encouraged to make use of the safety devices which are available to them, such as safety shoes, special goggles, safety belts for workmen operating at great heights, etc. Safety apparel which is compulsory in some trades is furnished free to the workmen by the company, and Consolidated also provides metal screens and glass shields around all dangerous moving parts in the plant. Workmen in the shipbuilding divisions are made to wear metal hats, referred to above, and safety posters are put up throughout the shops of all of Consolidated's plants.

A good safety engineer, according to Mr. McGaha, is really born to his profession. Of course, many men can be taught the principles of safety engineering, but the job requires more than that. It requires a sound instinct for solving complicated safety problems, an inherent ability to sell, an aptitude for anticipating disaster before it occurs, and a consuming interest in saving men's lives.

Steady As You Go!

(Continued from page 95)

the beam on her port side; she is on the starboard tack when the wind is abeam or forward of the beam on her starboard side. The rules do not state the time duration required for a blast on the foghorn, but the interval between signals must not exceed one minute. When a fogborn is heard, a rough estimate of the sailing vessel's course can be ascertained by carefully observing the true direction of the wind. Care must be used not to mistake the air whistle of a diesel-propelled vessel for a sailing vessel's foghorn.

Danger Signal

The danger signal, more than four short blasts of the whistle, is required in the inland waters of the United States whenever its use is deemed necessary.

Table "C"

The whistle signal, one long blast, as prescribed in Article 18, Rule 5, is peculiar to the United States' Inland Rules. It is the only long-blast signal to be found in the rules; it is generally understood to be a blast somewhat longer than the prolonged blast, and is usually about ten to twelve seconds in duration. When used as a "bend signal," as prescribed in the first paragraph of Rule 5, it must be sounded by a steam vessel when approaching a bend or turn in a river where an approaching vessel cannot be seen for a distance of at least one-half mile; the approaching vessel shall answer with a similar signal. The rule goes on to say that passing signals shall be given and answered immediately after hearing and answering these warning signals; this, in the light of Article 18, Rule 9, must be understood to mean "immediately after sighting each other."

The statement that, if the vessel sounding the warning signal does not hear an answer, then she is to consider the channel clear, may be confusing. It is quite possible for the approaching vessel's warning signal to be inaudible on account of local conditions. All vessels when approaching a bend should rigidly adhere to the provisions of Article 25, and keep to their own right-hand side of the channel and maintain a good lookout for approaching vessels.

This same long-blast signal is used by steamers when leaving a berth or dock, whether or not they are partly in view of other vessels and whether moving ahead or astern; the precise time at which the signal is to be given is not stated in the rule. However, the purpose and spirit of the rule require it to be sounded at such time as to give seasonable warning of the intended movement to any approaching or passing vessel. If the vessel is backing out of a dock, the three-blast signal should be used after the warning blast should its use be necessary after another vessel comes in sight. Until such time as the vessel is settled upon her course, she shall be governed by Article 27, the rule of special circumstances.

Running LIGHTS

Who When Where

The Golden State

There's a new name for the familiar Maritime Academy vessel, which all of us have known over the years as California State.

The ship is now registered as Golden State.

Word reaches us from B. M. Dodson, executive officer and member of the faculty of the Academy, that engineering cadets are now receiving complete training in diesel as well as steam, and that the former three-year course aboard the ship has been speeded up to graduate cadets within twenty-two months.

Captain Claude B. Mayo, superintendent of the California Maritime Academy, has made this timely announcement:

"War has intensified the need for the graduates of the CMA in the service of their country at sea. Graduation of the class of 1942 has been advanced from May to January. The exercises will be simple, as is befitting the times, and will be held at 2:30 o'clock on Saturday afternoon, January 10, in the auditorium of the P. G. & E. Building in San Francisco."

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New Firm Name

The firm name of Stanton & Berry has been changed to Berry & McCarthy, industrial traffic managers, transportation counselors and ocean freight forwarders, with offices at 260 California Street, San Francisco, as announced in December.

The company also announced that Earl S. Williams, formerly examiner and assistant rate expert for the Railroad Commission of the State of California, had become associated with the firm.

C. E. PARKS

New Coast Manager

Recently appointed to the responsible position of Pacific Coast District Manager of Ilg Electric Ventilating Company is C. E. Parks, who has made his headquarters at 816 West Fifth Street in Los Angeles, where he will have supervision of the Ilg offices in Seattle, San Francisco, Los Angeles, Salt Lake City, Phoenix and El Paso.

Marine sales representatives for Ilg products are the George E. Swett Company, San Francisco, who have long been identified in sales and service work for this ventilating equipment manufacturer in the shipbuilding and ship operating fields.

Mr. Parks has been connected with the Ilg Electric Ventilating Company continuously for fifteen years, starting as a salesman in the Pittsburgh office on October 15, 1926. He was in that office until November, 1930, when he was made manager of the Detroit office, where he stayed until March, 1932. At that time, he was brought back to Pittsburgh and made manager of that office, where he stayed until his appointment in November, 1941, as Pacific Coast District Manager.

He is a member of the American Society of Heating and Ventilating Engineers, and, while in Pittsburgh, always took an active part in the local chapter, and several times attended meetings of the National Chapter.

Quoting Mr. Parks:

"While in Pittsburgh, it was my privilege to design and lay out ventilating and heating installations for practically all large industrials in the Pittsburgh area. Included in this list are many well-known companies, such as Pittsburgh Plate Glass, and various subsidiaries of the U. S. Steel Corporation, Pittsburgh Steel, Wheeling Steel, Hubbard & Company, and many others.

"Due to the size and location and the type of commodities manufactured in some of these plants, ventilating and heating is as much a necessary part of the plant as the steel of which they are made. Therefore, it is quite necessary that sound engineering be used in the design of any heating and ventilating systems going into these plants.

"The management of the Ilg Electric Ventilating Company, as well as myself, is of the opinion that the Pacific Coast section of the United States will build up industrially year after year, until ultimately it becomes as important a factor in the industrial world as the Atlantic Seaboard."

Cargocaire Appoints

The Cargocaire Engineering Corporation announces the appointment of Lawrence G. Sovulewski as general manager, effective November 1, 1941. Since December 22 the New York offices of this company have been located at 75 West Street, and the new telephone number will be WHitehall 3-4818.

Mr. Sovulewski brings to Cargocaire a fine background of marine and technical sales-engineering experience. He has been manager of the Marine Signal Apparatus Division of Wallace & Tiernan Products, Inc., for the past eleven years, and has been actively engaged in important export activities in this company as well as directing their domestic business.

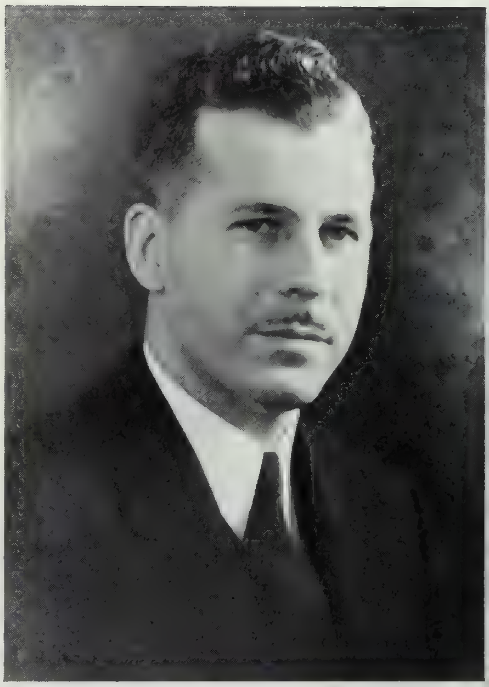
He is a graduate engineer from the University of California. Early experience in structural and hydraulic design and construction, including work for the United States Public Health Service in the Departments of the Interior and Treasury provided him with much practical engineering knowledge. Experience gained during a period of intensive inspection of vessels for the Public Health Service, together with his close attention to marine signaling and navigation problems, make him well suited for his new responsibilities.

Mr. Sovulewski was born and raised in California, and spent much of his early life in Yosemite National Park, where his father was supervisor for thirty-five years. He served in the United States Army Air Corps in France during the first World War, and is now charged with the building of vital cargo hold dehumidification equipment for the United States merchant marine and many naval vessels. Present officers of the Cargocaire Engineering Corporation are: Mark R. Colby, president; O. D. Colvin, vice president and chief engineer; L. G. Sovulewski, vice president and general manager; T. L. Harrison, secretary; and F. E. Wubbena, treasurer.

Training School and Research

Much thought and planning have been put into the selection and layout of the new Cargocaire offices at 75 West Street, which have been occupied since December 22, 1941. These have been designed not only to give most efficient production of National Defense orders, but also to provide complete facilities for training ship officers in the operation of Cargocaire. Full scale equipment will be installed insofar as possible and actual operating conditions on board ship will be simulated. Thus, it will be possible for men whose ships are being fitted with Cargocaire to receive expert preliminary instruction previous to their maiden voyages. Full details of the training course and further information regarding its conduct will be announced in the near future.

In addition to the instruction of ship personnel, the full scale equipment to be installed at 75 West Street will be available for research and experimentation by Cargocaire engineers. This will make possible actual observations of various types of cargo sensitive to moisture damage under virtually all conditions to be encountered at sea.



LAWRENCE G. SOVULEWSKI

All Cargocaire-equipped ships are capable of delivering defense material without loss from moisture damage to any port in the world regardless of climate.

AN ALL-OUT WISH for Christmas and the New Year was sent to customers of The American Rolling Mill Company with every shipment of iron, steel and stainless steel sheets. The message combined Christmas greetings with the defense spirit and read: "We're All-Out for Holiday Greetings Too." This was printed in playbill type below a red and white diagonally striped background, suggesting a flag. A green cedar bough over a white silhouetted Christmas tree and an unfurled ribbon lent a festive air. The company signature also appeared in playbill type. These 14 by 20-inch cards, printed in red and green on white, were put on all shipments of special iron and steel sheets customers received during the holiday period

News of the Propeller Clubs of the United States

Port of San Francisco

Holiday observance around maritime circles in San Francisco witnessed the now traditional "open house" at the quarters of Geo. E. Swett & Co., Engineers, several "drop in" affairs at local steamship offices and the staging of Christmas programs by clubs and organizations close to the transportation picture.

As an example of "chin up" spirits and good fellowship, the Yule party at the George Swett's building was rich in friendly camaraderie, attended as it was by the "old guard," who have made this annual event their pre-Christmas rendezvous for many a year.

The Propeller Club, Port of San Francisco, took over the beautiful Concert Room of the Palace for their Christmas party. Said Eugene F. Hoffman, secretary-treasurer, in the announcement:

"These are serious times, and your Club activities will be adjusted accordingly. But . . . Christmas is a very old institution, and it shall continue to be observed as the symbol of Peace in a free America, and a free World, long after the Rising Sun has set and the swastika has become an historical badge of dishonor.

"Your new House Committee has arranged a real Christmas Party, 'with all the trimmings!' The serious note will be provided by Joseph Geary, Convention Chairman of the Resolutions Committee, who will speak for 15 minutes on the significance of the resolutions adopted by the National Convention.

"Strategists of morale agree that the greater the strain the greater the need for wholesome relaxation. So bring a friend and come along Tuesday . . . and drink a toast to Men of Good Will!"

The response to Gene's bid was heart-warming! Seldom have we attended an event which caught the fine spirit of that brand of friendship which flourishes with the warmth of the Christmas season!

Presiding was newly-elected Arthur B. Poole, who introduced our own member Joseph Geary.

Joe's talk was an informal, always interesting accounting of accomplishments of the well-revered Resolutions Committee, who functioned early, often and late at the October National Convention.

Random shots by our ubiquitous photographer appear here to bring our readers some of the flavor of the very successful event.

An orchid goes to Clyde Williamson, newly appointed chairman of the house committee, for the smooth arrangement.

Mr. James S. Hines, Publisher
Pacific Marine Review
500 Sansome St.
San Francisco.

Dear Mr. Hines:

In closing the books and winding up affairs in connection with our recent Propeller Club Convention and American Merchant Marine Conference, one of the things I overlooked was to thank you and your publication for the splendid editorial support on this important shipping event.

At this late date I wish to fulfill this obligation and to assure you that all of the maritime industry in San Francisco are deeply appreciative of the excellent cooperation and support accorded our Convention. Admiral Land and other important visitors from the East Coast complimented us by stating it was the finest shipping convention they had ever attended.

You and members of your staff, particularly the invaluable assistance rendered by Mr. Bernard DeRochie, had a large part in making our Convention whatever success it was, and for that I wish to express the sincere appreciation of our entire Convention Committee.

Very truly yours,
E. H. Harms,
General Convention Chairman.

In attendance at the Christmas party of San Francisco's Propeller Club were many of the Bay area shipbuilding and operating leaders. Pictured here from left to right are Paul Cotton and A. S. Gunn of Bethlehem Steel's San Francisco division. Next is Howard Tallerday, president of Western Pipe & Steel. The pensive chap at the right is Bern DeRochie of PMR

The Port of New York

Commander Robert C. Lee, National President of The Propeller Club of the United States and executive vice president of Moore-McCormack Lines, in a statement this month said that the year 1942 would be crucial to the American merchant marine inasmuch as the greatest problems of transport ever created in our history would demand solution by the nation's shipping men in cooperation with the government.

Commander Lee said that the wartime emergency had created and undoubtedly would continue to create situations which would demand a new initiative and efficiency of shipping inasmuch as materials required by the national defense would flow into our ports from all parts of the world for fabrication and would then be shipped out to its final destinations on emergency schedules.

The farsightedness of the United States Maritime Commission in planning new ships in the years prior to the war has eased the way in meeting the problems thus far, he pointed out, and will be reflected even more so with the

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At the right is George A. Armes, president of General Engineering & Dry Dock Company. Center is W. C. "Bill" Empey, publisher of The Guide

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passing of each month as new merchant ships slide down launching ways throughout the country. It is up to the ship operators to match the commission's performance, said Commander Lee.

"The American merchant marine," he said, "has met the wartime emergency magnificently, bearing out the predictions of shipping men that when the time came merchant ships would be found in the front ranks of our defense effort. The nation may well shudder to consider the plight in which we and our allies would have found ourselves today and in the past two years had not the Maritime Commission in 1938 undertaken its program calling for construction of fifty new merchant ships annually for ten years.

Mr. B. N. DeRochie
Vice President
Pacific Marine Review
500 Sansome Street
San Francisco, California

Dear Mr. DeRochie:

Thanks very much for yours of November 29th calling my attention to the accompanying copy of the Pacific Marine Review, for November. It is a very nice issue of the Review and I am pleased that you saw fit to include my paper in it.

With kind personal regards,
Sincerely yours,
Robert C. Lee
Moore-McCormack Lines, Inc.
5 Broadway, New York.

"The Commission's program had actually got under way, the shipyards had brought together more than the nucleus of the organization that is now functioning, the ship operators of the nation had started their task of organizing and operating personnel on the basis of the greater merchant marine which the Commission envisioned. All of these preliminary steps were taken under peacetime conditions, so that when war came we were able to swing into action with a minimum of the preparatory work which, while necessary, would have slowed up actual work to a terrific degree if forced upon us after war started.

"We are able now to recognize the fact that actually we have been at war more than two years. We have been the allies of Britain since she entered war, though our activities were long limited to the furnishing and transport of materials. We were able to be effective allies only because we had the ships. Now we are able to plan a real effort as combatants because we have our shipbuilding program under way and are strengthened by the confidence that we will have the facilities to get men and materials where we want them as time goes on."

Commander Lee pointed out that shipping leaders had predicted this situation ever since the first World War when a lack of ships and shipbuilding facilities forced the United States into an effort to create a shipbuilding industry under emergency conditions, with a resultant cost of about $4,000,000,000. The ships then built were not actually launched until the war had ended. In the last twenty-five years various groups, among them the Propeller Club of the United States, have sought to develop a national consciousness of the value of a strong merchant marine, both as a means of moving commerce in peacetime and as an arm of defense in time of war.

"These efforts," said Commander Lee, "were successful to a degree, but we have long realized that the general public can be educated along merchant marine lines only during an emergency. The Propeller Club at its recent Fifteenth Annual National Convention held in San Francisco, authorized the appointment of a national committee on education, and I am now considering the personnel of such a committee. We hope that by undertaking in wartime a program of education we can prepare the nation for the post-war period, and make it impossible for our people ever to forget that a nation like ours is safe in defense and in commerce only as long as a real merchant marine flies our flag."

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Port of Los Angeles

A rousing plea for adequate discipline in the American Merchant Marine service and appropriate punishment for insubordination was given to members of the Propeller Club, Port of Los Angeles No. 66, at their monthly general membership meeting held Wednesday noon, November 26, at the Pacific Coast Club, Long Beach. Speaker at the luncheon was Captain Richard B. Coffman, USN., Commandant, Navy Operating Base, San Pedro.

Although the meeting had been designated as a belated observance of Navy Day, Captain Coffman chose as his subject the American Merchant Marine. In discussing what should be done for the merchant service, Captain Coffman said:

"I subscribe thoroughly to everything which has been done to improve the lot of those men who go to sea in our ships. They should have comfortable, sanitary and adequate quarters. They should be well fed and they should be well paid. Their working conditions should be as well as it is possible to make them.

"I have the sincere hope that the day is coming when there will be established for the merchant marine a body of rules something like the articles for the Government of the United States Navy, which will build morale, maintain discipline and place the safety and efficiency of the ship above the welfare of any single man, group of men, or of any labor union.

"I hope the day is coming when the master of a merchant ship can say to a disobedient or insubordinate seaman, 'Look here son, two days bread and water for you.' It is basic, it is necessary, whether it be a master in our merchant marine, or captain of a naval vessel. He must be backed by the law, or else the entire foundation of the command either merchant or naval will be so frail that we can never hope to be able to recapture, earn, or deserve those treasured qualities of our forebears, who sailed our clippers and fought at sea. They have handed us a heritage well worth fighting to retain."

Captain Coffman in his address paid tribute to the accomplishments of early American ship captains and gave a review of American shipping history.

One of the high lights of the meeting was the induction of Rear Admiral Albert Ware Marshall, USN Ret., as an honorary life member of the Propeller Club, Port of Los Angeles. The membership was presented by Edgar Wilson of the American President Lines and first vice president of the Club, on behalf of the Board of Governors. Admiral Marshall, in a fine response to the honor, pledged his wholehearted cooperation and support to the local club and to the principles for which the Propeller Club of the United States was organized.

Howard Wickersham, member of the Board of Governors, presented to the 120 assembled guests, seventeen new members admitted to membership during the past thirty days.

The meeting was one of the most popular in the recent series of Propeller Club meetings, as shown by the full attendance. Many of the members commented upon the able and witty work of President Fred A. Hooper, who presided over the meeting.

As an addition to the usual program and in keeping with the Naval theme of the meeting, two songs were rendered by Sydney Taylor, torpedoman, USN, accompanied by Seaman Waite, USN.

December Meeting at L. A.

Seventy-five members of the Propeller Club, Port of Los Angeles, No. 66, in attendance at the monthly luncheon-meeting held December 18 at the Biltmore Hotel, heard Edmond L. Greene, public relations officer for the Sheriff of Los Angeles County, discuss the plans that are being perfected for civilian defense of this area.

Mr. Greene revealed that the Citizens Defense Council consists of 100 council members divided into seven major committees, that of civil protection, human resources, transportation and housing, agricultural resources, industry, health and public information. Many hours of work went into the setting up of this plan, which the speaker termed as "passive" defense, that of "active" defense being handled by the military.

Rear Admiral Albert Ware Marshall, USN, retired, and an honorary member of the Los Angeles Propeller Club, told the members at the luncheon, in a few short words, that the sinking of the British war vessels, Prince of Wales and Repulse, brings home the fallacy of a "separate air force," claiming that every war vessel in action should have with it an adequate air force under command of the Admiral of the Fleet. "Unity of command is the first principle in a military campaign," he said, continuing that "if the two British war vessels had been accompanied by an air force, these ships would have been protected from the air."

President Fred Hooper, presiding at the meeting, told the members that this meeting was in honor of the 150th anniversary of the Bill of Rights. In commenting upon the anniversary Mr. Hooper declared that the "Bill of Rights is our anchor of liberty. Now, freedom's greatest charter is endangered. The lovers of liberty, the defenders of freedom," he said, "are battling against the villianous foes from without who would destroy our rights and liberties and the American way of life. Democracy today is at death grips with a man's philosophy which would destroy our every fundamental freedom."

President Hooper called upon the members to purchase Defense Bonds and to offer their services to the civilian defense and military.

Judge Marshall McComb, member of the Appellate Court, and a Lieutenant-Commander of the USNR, regional president of the Navy League, addressed the members of the Propeller Club, inviting them to become members of the Navy League. He suggested those interested place their applications through Edgar M. Wilson, district manager of the American President Lines and first vice president of the Propeller Club.

In closing the meeting President Hooper announced that Howard Wickersham, member of the board of governors and who officiated as local chairman of the convention committee during September and October, has just been called into active duty by the Navy Department. He holds a Lieutenant's commission in the USNR.

Port of Tacoma

The December dinner and meeting of the Propeller Club, Port of Tacoma, was held on the 16th at the regular meeting place, the University-Union Club.

This meeting, which was the first one held since our October session, as the Club met with the Transportation Club of Tacoma in November, was well attended and very interesting.

Immediately after the dinner, President Ackerman asked Perry Moore and Fred Dravis to give a report on the National Convention of the Propeller Club of the United States held in San Francisco, which they both attended. They reported a very fine convention was held in the Bay City and that everything passed along very satisfactorily.

Another matter taken care of was the raffle of tickets in the interest of the Tacoma Sea Scouts and the Schooner "Albatross." President Gil called on Phil Gruger to give a short report of the results of the ticket sale and he stated that approximately five hundred tickets had been sold. This would mean a sum of two hundred dollars would be available for the Sea Scouts after the prizes, totaling fifty dollars, were deducted.

Mr. Ackerman spoke very briefly in regard to the coming election of officers of the Club for 1942. This election will be held at the January meeting.

The real high light of the evening was the talk by Harry Cain, Mayor of the city of Tacoma. Mayor Cain gave an account of what had been done so far and what was to be done by the city and its people in connection with the Home Defense Program during the present emergency.

A round table discussion in regards to this defense program was held, with the Mayor the target of many questions, after which the meeting was adjourned by President Ackerman.

CHAS. CRAMP, *Secretary.*

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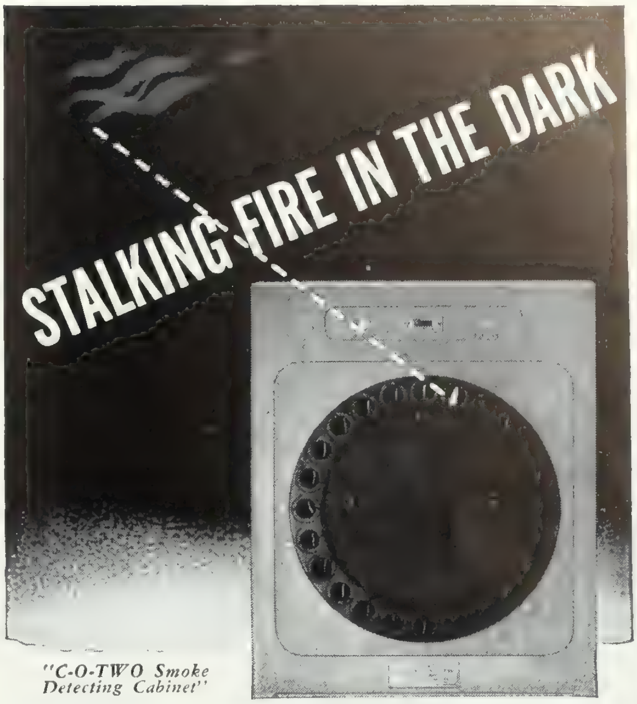

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10 EMPIRE STREET, NEWARK, NEW JERSEY
Sales and Service in the Principal Cities of United States and Canada

Keep Posted

(Continued from page 87)

Fifth Avenue. Approximately 156,000 Hygrade fluorescent lamps are being installed.

This is the largest single fluorescent lamp-lighting installation in the history of the industry, which began in 1938 with a sale of some 200,000 lamps. The sales figure jumped to 1,500,000 in 1939 and to 7,500,000 in 1940.

Already spoken of as one of the greatest home and factory developments which will progress out of America's war effort, the industry estimates total lamp sales for 1941 as approximately 21,000,000 with a predicted 40,000,000 for 1942.

The new Ford bomber plant covers some 3,700,000 square feet of floor space at Willow Run, near Ypsilanti, Michigan. It will produce four-engined B24D Consolidated bombers, described as one of the most formidable aerial war weapons in existence.

The fluorescent lamps, described as increasing plant efficiency through reduction of eyestrain and as simulating "true northern daylight," are cool, glareless and more than twice as efficient as incandescent lamps. Twelve fully-loaded freight cars were required to carry the lamps necessary for this installation.

Infra-red Heating For Shrinkage Fits

To reduce rejects frequent in press fitting of aluminum and steel parts, infra-red heating is now being used at the Westinghouse small motor plant at Lima, Ohio. Aluminum frames are heated to 150 degrees centigrade, which expands the 6¾-inch bore .020 inch, enough to allow the wound primary to drop in place.

When press fits are reduced to the point where scoring or "galding" does not result, the hazard of loose fitting parts is greatly increased, which invariably means heavy scrap losses. Using the infra-red heating method as suggested by Fred C. Gossett, supervisor of methods, tools, and equipment at Lima, the shrink fit allowance is much larger than that practical for a press fit. A rotary conveyor, traveling at the rate of 30 feet per minute, carries aluminum small motor frames through a tunnel formed by a battery of fifty-six 375-watt lamps. Until this method was discovered, the mechanical operation of obtaining proper fits between hard and soft metal parts had always been more or less unsatisfactory.

4-Pound Radiotelephone Set

A completely self-contained radiotelephone combination transmitter and receiver, weighing only four pounds, and not much larger than the handset of a "French" telephone, has been announced by the Communications Division of Weltronic Corporation, Detroit. The unit is being made available to governmental agencies and services, including municipal divisions, public utilities, fire and police departments, railroads and other transportation agencies, as well as individuals, subject of course to licensing by the Federal Communications Commission where required, as well as priority rating.

New radiotelephone set

Believed to be the most compact and lightweight complete transmitting and receiving outfit ever produced, the built-in battery power supply for the new Weltronic "Trans-Ceiver" under continuous operation, has a rating of about 8 hours. This is equivalent to approximately a week to a month's operation under normal intermittent service. The power supply is derived from standard commercial batteries in order to keep battery replacement cost at a minimum and facilitate maintenance of operation.

With a range of upwards of a mile over land, the units are provided with off-and-on switches and finger-operated selector to change from transmitting to receiving and vice versa, while talking through the unit.

Although the Weltronic "Trans-Ceivers" are designed for operation on a single wave length, thus requiring no tuning in service, their frequency range is adjustable from 112 to 300 megacycles through a simple externally accessible screw adjustment.

Also provided on the units are a volume control and a detachable, adjustable, short fish-pole type aerial.

Construction of the "Trans-Ceiver" is as rugged as that of a commercial telephone unit.

In operation, when the toggle switch is thrown into the "on" position, the unit is "receiving." To talk through the unit, it is necessary merely to pull the selector finger lever down against light spring pressure. Releasing the selector lever switches the unit back to "receiving" again.

The "Trans-Ceiver" may thus be used in pairs or groups, with or without a central receiving and transmitting control station.

General Electric Announces New Electronic Motor Control

As an outgrowth of its thyratron speed control for dc motors, the General Electric Company has announced a new electronic control system, called Thy-mo-trol, to provide simple, stepless control of direct-current motors from alternating-current lines wherever a wide speed range is needed.

With this new development, the flexibility of dc motors can now be combined with the economy and convenience of ac power distribution. The Thy-mo-trol system leads to simplified machine design, reduced space requirements, and a saving in time over more complex methods of obtaining a wide speed range.

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OAKLAND, CALIFORNIA

New Method of Signalling Temperatures

The Tempil Corporation, makers of Tempil° Thermometric pellets, announce a new, convenient form of their product, called Tempilstik°.

Tempilstiks°, like Tempil° pellets, have a specified melting point. They are available from 125° F. to 1600° F., in convenient temperature intervals, and have a mean accuracy of within one per cent of the temperature clearly stamped on each stick or pellet.

Thus a 300 Tempilstik°, drawn across a surface heated to less than 300° F., will leave a chalklike mark, which melts sharply into a liquid streak when the surface reaches 300° F.

Tempil° pellets and the new Tempilstiks° provide a revolutionary, yet simple and convenient method of signaling desired preheating temperatures in the welding of steel, special alloys, cast iron and non-ferrous metals; in local heating, heat-treatment and fabrication of metals generally; in short, for all metal-working operations which require careful and accurate temperature control. They are particularly useful in the black-heat range, where the importance of accurate control is becoming increasingly recognized.

The new Tempilstik° offers a means of leaving a temperature signal mark on less accessible places, such as vertical, inclined and overhead surfaces. Properly used, each stick will yield up to 1000 temperature determinations.

Tempilstiks° come packed in a handy individual tube that fits the pocket and prevents breakage, and are priced at $2 each. Complete data on Tempil° technique, and sample Tempil° pellets of any one stated temperature will be supplied by the manufacturer, on request on your company letterhead.

New Lubricator for Pneumatic Tools

A new type sight-feed lubricator for air-driven equipment, which operates successfully regardless of its position in the line, has just been developed by the Roto Company, 145 Sussex Ave., Newark, N. J., manufacturers of tube cleaning equipment. Because the new type lubricator has no baffle, it can be turned to any position convenient for visibility. Baffle type lubricators will operate only in a certain position and, after being tightened in the line, must sometimes be backed off as much as ¾ of a turn before they will work.

Another feature of the new positive-action Roto sight-feed lubricator is that it requires only a single regulating valve instead of the three separate valves used on previous types. Oil is added by removing a simple screw plug at the top of the lubricator.

Roto lubricators are installed in an ordinary tee in the air line. They are made in ⅘ pint and quart sizes, and can be regulated to drop as few as 5 drops of oil per minute. While the new lubricator was developed to assure a positive oil feed for the company's tube cleaners, it may also be used with other types of air-driven equipment.

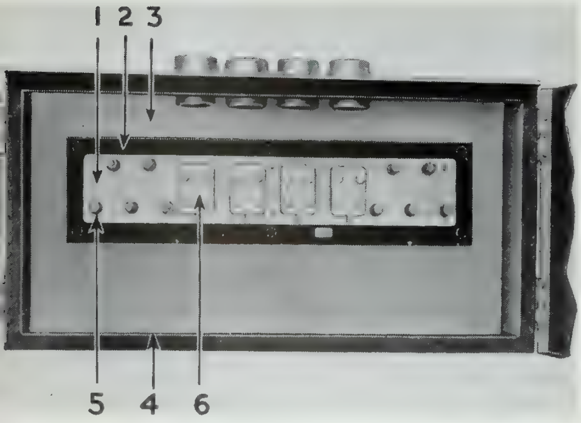
Normally consisting of three separate units—a small control station, a transformer, and a thyratron tube panel—the control is the first to provide in one equipment the means for electronically starting, stopping, accelerating and regulating the speed of a motor. Standard units will cover motor sizes up to five horsepower, 230 volts.

The Thy-mo-trol system provides wide-range speed control without the use of motor-generator sets or gear and pulley arrangements. A single-dial control, mounted in a heavy-duty push-button station, covers the complete speed range of the motor, both above and below basic speed. The motor is automatically accelerated to preset speed quickly and smoothly without excessive current peaks. The same single dial can also be used to change speed to any desired value during operation.

Thy-mo-trol equipment can be provided for reversing service by the addition of a standard magnetic reversing switch. It can also be furnished with dynamic braking.

In operation, the change from alternating to direct current for the motor field and armature circuits is accomplished by two pairs of thyratron tubes. The control compensates for changes in armature-voltage-drop, holding motor speed constant regardless of normal-load and line-voltage variations.

The stepless speed control increases armature voltage up to basic speed and weakens the field at speeds above basic. Acceleration is automatic. Full field is held until basic speed is reached and is also automatically applied during dynamic braking.



The O. Z. electric welding panel

A thermal overload relay protects the motor on sustained overloads. Fuses provide dc short-circuit protection.

Thy-mo-trol equipment is compact and easily mounted. The control station may be located accessible to the operator, thus allowing complete control of a machine from one location. The thyratron tube panel can be furnished in various types of enclosing cases, such as those for corrosive or dusty atmospheres.

Convenient Welding Terminal Panel

A welding terminal panel has been developed by O. Z. Electrical Mfg. Co., Brooklyn, N. Y., particularly for use in shipyards and similar installations in connection with the constant potential system of welding feeders. The new device provides opportunities to install at any desired points, panels that intercept the main welding feeders throughout the yard, and provide facilities for the welding leads.

Referring to the illustration herewith: Panel (1) is a solid bronze casting mounted on an ebony asbestos block (2), which in turn is mounted in a No. 10 gage bent-up construction iron box (3), completely hot dipped galvanized after fabrication. The box top is slanted to shed water. Slots (4) in the bottom of the box provide entry for welding leads which are to be attached to terminal studs (5) on the panel. These stud bolts are force-fitted through the back of the casting. The removable plates (6) or clamps provide means for tapping the main feeder.

Simple modification readily adapts this panel to existing conditions on any given job. The manufacturer reports that an important installation has been made for defense work in one of the leading shipyards of the country and that other yards have shown active interest.

New Waterproofing Compound

Primoid Standard is one of four new waterproofing compounds, announced by the Primoid Products Corporation, which are effective seals for concrete, brick, stone and other types of masonry, as well as for wood and composition materials, such as shingles. These Primoid products can be used to prevent or correct any leakage problem from mere moisture to a flowing stream.

Primoid Standard is a clear rubber-base liquid which can be either sprayed or brushed on. It penetrates deep into the pores of the material to be waterproofed, effectively sealing the surface, and adhering permanently. It will not crack or peel off, and is not affected by heat or cold. Either dry colors or colors ground in oil can readily be mixed with this compound. It can also be used as a coating for iron, steel and other metals, and will prevent corrosion, because it is resistant to oils, alcohol, gasoline, brine, acids and other chemicals.

Available in 1, 5 and 10-gallon cans, also 30 and 55-gallon drums . . . coverage 300 to 600 square feet per gallon, depending on the porosity of the material being coated.

A New Standard Griddle

Designed to give top efficiency at a moderate price, the new "Kitchen-King" Standard griddles are now available in three popular sizes, 18″, 24″ and 36″, according to a recent announcement by Associated Products Company, Inc., of Akron, Ohio. Each unit is operated with sectional automatic heat controls—one for each 12″ of cooking surface, except the 18″, 3 kv unit, which employs a single control. The rated wattage for the 24″ and 36″ units is 2000 watts per 12″ section.

Ideally adaptable for intermittent service needs, these griddles will meet exceptional peak requirements and stand continuous faithful duty.

The full-width, removable grease pan at the rear of cooking area makes it easy to keep the surface clean. Convenient banking of units, regardless of the combination of griddle sizes utilized, is possible without requiring space between. Should manual control operation be required, these units may be obtained with 3-heat, double-pole reversible switches.

"Kitchen King" Standard griddles are furnished in standard voltages, ac or dc.

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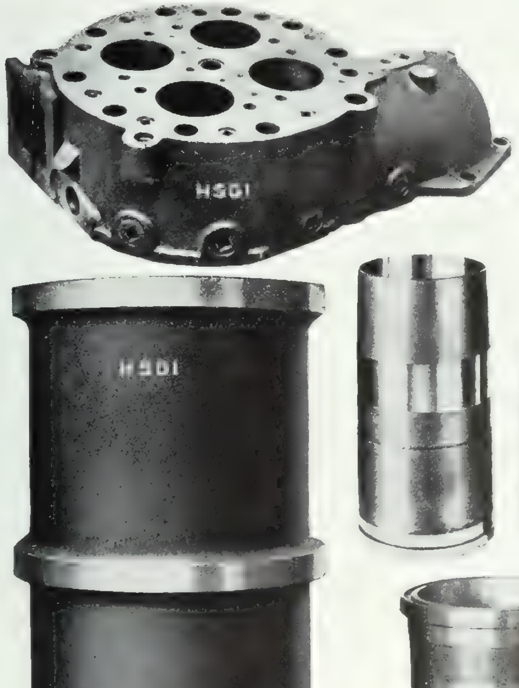

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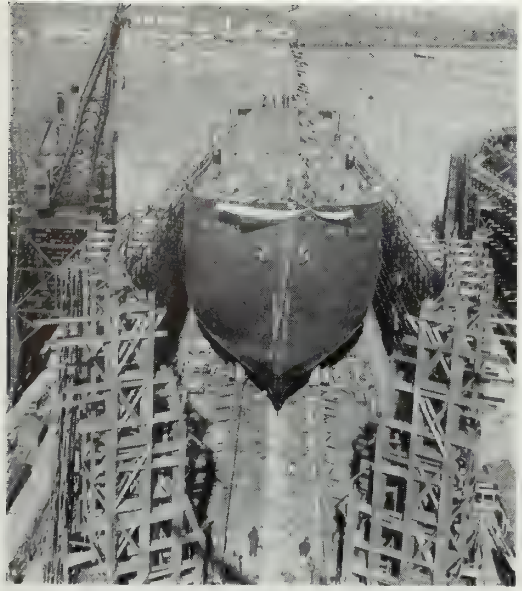


PROGRESS IN American Shipyards

★ Asterisk indicates new listings.

Pacific Coast

ALBINA ENGINE & MACHINE WORKS, INC.
Portland, Oregon

New Construction:

Hulls Nos. 51-59, nine 165′ steel submarine chasers for U. S. Navy. **Four keels laid up to December, 1941.**

ANDERSON & CHRISTOFANI
San Francisco, Calif.

New Construction:

Six 97′ AMC coastal mine sweepers for U. S. Navy.

One 48′ yacht for Herman Hogrefe. **Completed.**

One 60′ purse seiner for S. Piazza.

ASSOCIATED SHIPBUILDERS
Seattle, Wash.

New Construction:

One insulated self-propelled lighter for delivery to U. S. Navy at Puget Sound Navy Yard.

Four small seaplane tenders for delivery to Puget Sound Navy Yard.

Six wooden mine sweepers for delivery to U. S. Navy at Puget Sound Navy Yard.

ASTORIA MARINE CONSTRUCTION CO.
Astoria, Ore.

New Construction:

Four 135′ wooden diesel-powered mine sweepers for U. S. Navy. Delivery in 14 months.

BASALT ROCK CO., INC.
Shipbuilding Yard—Napa, Calif.

New Construction:

Hulls Nos. 22-23, two 10,000-bbl. fuel oil tankers, for delivery to Mare Island Navy Yard. 235′ x 37′ x 19′3″; 1000-hp diesel electric; cost $1,800,000. Contract awarded by Navy Dept., Bureau of S. & A., Washington, D. C. Keel laying dates, No. 22, June 20, 1941; No. 23, August, 1941. **Launching dates,** No. 22, October, 1941; **No. 23, December, 1941. Delivery dates, No. 22, January 30;** No. 23, May 30, **1942.**

Hull No. 28, self-propelled lighter for U. S. Navy. 132′6″ x 30′ x 12′4″; 300-hp diesel; 500 gross tons; cost $370,000. Delivery date, February 15, 1942.

BERKELEY STEEL CONSTRUCTION CO.
Berkeley, California

New Construction:

One all-welded utility diesel-electric stern wheeler for U. S. Engineers. 102′ x 26′ x 5′. Cost $114,800.

BELLINGHAM MARINE RAILWAY & BOATBUILDING COMPANY
Bellingham, Wash.

New Construction:

Hulls Nos. 17-20, four mine sweepers for the U. S. Navy. Keel laying dates, No. 71, July 16; No. 18, July 22; No. 19, July 26; No. 29, July 31, 1941.

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Division—San Francisco Yard
San Francisco, Calif.

New Construction:

Hulls Nos. 5366-5367, two 1650-ton destroyers, DD459-DD460, for U. S. Navy. Keels laid January 13, 1941. Launching date, No. 5366, October 30; No. 5367, November 29, 1941.

Hulls Nos. 5368-5383, sixteen 2100-ton destroyers, DD526-DD541. Keel laid, No. 5368, November 29, 1941.

Hulls Nos. 5390-5396, seven 1620-ton destroyers, DD605 - DD611. Keel laying dates, Nos. 5390, 5391, March 25 and 28, 1941.

Hulls Nos. 5386-5389, four 6000-ton cruisers, CL95-CL98. Keel laying dates, No. 5386, July 13; No. 5387, August 1, 1941.

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Division—San Pedro, Calif.

New Construction:

Hulls Nos. 9001-9004, four 2100-ton destroyers, DD544-DD547.

Hulls Nos. 9007-9012, six 1620-ton destroyers, DD612-DD617. Keel laying dates, Nos. 9007, 9008, May 1, 1941; Nos. 9009, 9010, May 29, 1941.

BIRCHFIELD BOILER CO., INC.
Tacoma, Washington

New Construction:

One U. S. Coast Guard Cutter for Columbia River and Snake River.

Six 100′ tow boats for U. S. M. C.

CALIFORNIA SHIPBUILDING CORP.
Wilmington, California

New Construction:

Hulls Nos. 1-55, fifty-five EC-2 type cargo vessels for U. S. Maritime Commission. Fourteen keels laid up to October 14, 1941. **Launching dates,** No. 1, September 27; No. 2, October 26; No. 3, November 16; **No. 4, December 3; No. 5, December 21, 1941.**

CAMPBELL MACHINE CO.
San Diego, Calif.

New Construction:

Hull No. 69, 450-ton fishing boat for A. Tavaras & Co., 110′x26′x12′; 350-hp Union diesel. Cost $170,000. Keel laid June 1, 1941. Launching date, October 25, 1941.

Hull No. 70, 550-ton fishing boat for G. Vattuone & Co. 128′x12′ 6″; 500-hp Union diesel. Cost $210,000. Keel laid June 15, 1941. **Launching date, December 15, 1941.**

COLBERG BOAT WORKS
Stockton, Calif.

New Construction:

Three large wooden mine sweepers for U. S. Navy.

One 39′6″ L. O. A. survey inspection boat for U. S. Army Corps of Engineers.

COMMERCIAL IRON WORKS
Portland, Ore.

New Construction:

Seven steel mine sweepers for U. S. Navy.

Four fleet tugs for U. S. Navy.

Four steel submarine chasers for U. S. Navy.

CONSOLIDATED STEEL CORP., LTD.
Los Angeles, Calif.

New Construction:

Hulls Nos. 157, Aguiprince; 158, Alcoa Pennant; 159, Alcoa Polaris; 222-251, 33 C-1-BT, full scantling, turbine propulsion cargo vessels for U. S. Maritime Commission. **Keel laying dates,** No. 159, April 7; No. 222, November 20; No. 223, November 25; **No. 224, December 20; No. 225, December 29, 1941.** Launching dates, No. 157, March 27; No. 158, June 26; No. 159, September 27, 1941; No. 222, March 30; No. 223, April 17; No. 224, May 4; No. 225, May 22, 1942. **Delivery dates,** No. 157, November 10; **No. 158, December 8, 1941; No. 159, January 15, 1942.**

Hulls Nos. 206, U. S. S. Doyen; 207, U. S. S. Feland; two design P1-S2-L2 twin-screw turbine propulsion transports for the U. S. Maritime Commission. Keel laying dates, No. 206, September 18; No. 207, November 10, 1941. Launching dates, No. 206, February 18; No. 207, June 17, 1942. Delivery dates, No. 206, June 29; No. 207, October 26, 1942.

F. L. FULTON
Antioch, Calif.

New Construction:

Six 97′ wooden mine sweepers for U. S. Navy.

GEN. ENGINEERING & DRY DOCK CO.
Alameda, Calif.

New Construction:

Eight mine sweepers for U. S. Navy.

HARBOR BOAT BUILDING CO.
Terminal Island, Calif.

New Construction:

Four 60-foot U. S. Navy target boats. Completed.

Hulls Nos. 117-120, four 136′ motor mine sweepers for U. S. Navy. Keels laid, No. 117, May 8, 1941; No. 118, May 12, 1941; No. 119, July 15, 1941; No. 120, August 23, 1941. Launched No. 117, August 23; No. 118, October 27, 1941.

HUBBARD'S SOUTH COAST COMPANY
Newport Beach, California

New Construction:

Four 45′ twin-screw aircraft tenders for U. S. Navy.

Six 135′ mine sweepers for U. S. Navy.

KRUSE & BANKS SHIPBUILDING CO., INC.
North Bend, Oregon

New Construction:

Hulls Nos. 121-124, four 135′ wooden mine sweepers, YMS type, for U. S. Navy. Cost $1,800,000.

LAKE WASHINGTON SHIPYARDS
Houghton, Wash.

New Construction:

Four anti-submarine net tenders.

Four thousand A. S. N. T. floats.

Coast and Geodetic Survey ship.

Six seaplane tenders for U. S. Navy.

AL LARSON BOAT SHOP, INC.
Terminal Island, Calif.

New Construction:

Hulls Nos. 112-113, two mine sweepers, YMS 86 and YMS 87, for U. S. Navy. Keels laid, No. 112, June 20; No. 113, July 18, 1941. Delivery dates, No. 112, February 10; No. 113, April 10, 1942.

LOS ANGELES SHIPBUILDING & DRY DOCK CORP.
San Pedro, Calif.

New Construction:

Hulls Nos. AR6-AR8, three repair vessels for U. S. Navy.

Hulls Nos. AV 11-AV 13, three seaplane tenders for U. S. Navy.

MOORE DRY DOCK CO.
Oakland, Calif.

New Construction:

Hulls Nos. 201-203, three cargo and passenger vessels for U. S. Maritime Commission and Alcoa Steamship Co. 442′x62′x25′; depth molded to bridge deck 41′6″; 8500 hp; 17 knots speed; passenger carrying capacity 38. Keel laying dates, March 26, June 3 and August 6, 1941. Launching date, No. 201, October 21, 1941. **Estimated delivery dates, January 1, March 15 and June 1, 1942.**

Hulls Nos. 212-213, two submarine tenders, for U. S. Navy. Keels laid, No. 212, July 31; No. 213, September 15, 1941.

Five submarine rescue vessels for U. S. Navy. Hull laid for one, September 15, 1941.

Hulls Nos. 214-219, six C-2 cargo vessels for U. S. Maritime Commission. Keel laying date, No. 214, October 21, 1941.

Twelve C-2 cargo vessels.

OLSON & WINGE MARINE WORKS
Seattle, Wash.

New Construction:

Hulls Nos. 40-45, six 40′ motor sailers for U. S. Army. Keels laid, three, September 15, 1941.

Conversions:

Five for the U. S. Army. Total cost, $50,000.

OREGON SHIPBUILDING CORP.
Portland, Oregon

New Construction:

Hulls Nos. 170-200 and 229-240, forty-three EC-2 type cargo vessels for U. S. Maritime Commission. Keel laying dates, No. 170 and No. 171, May 19; No. 172 and No. 173, May 31; No. 174, July 11; No. 175, No. 176 and No. 177, July 18; No. 178, September 18; No. 179 and No. 180, September 20; No. 181, September 30; No. 182, October 21; No. 183, October 26, 1941. **Launching date,** No. 171, September 27; No. 170, October 19; No. 172, October 26; No. 173, November 16; No. 174, November 23; **No. 175, December 7; No. 176, December 14, 1941.**

PACIFIC BRIDGE CO.
San Francisco, Calif.

New Construction:

One seagoing drydock for U. S. Navy. Cost $1,649,000.

PACIFIC DRY DOCK & REPAIR CO.
Oakland, Calif.

New Construction:

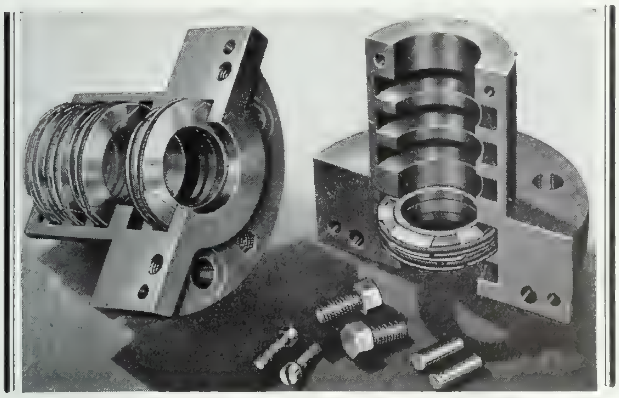
One all-welded steel oil barge. 148′ x 38′ x 9′; 300,000 gal. capacity.

Lighters. Cost $284,572.

RICHMOND SHIPBUILDING CORP.
Richmond, Calif.

New Construction:

Hulls Nos. 41-64, twenty-four EC-2 type cargo vessels for U. S. Maritime Commission.



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Federated Metals Division
AMERICAN SMELTING AND REFINING COMPANY
LOS ANGELES · SAN FRANCISCO · NEW YORK

Keel laying dates, No. 41, No. 42 and No. 43, September 17; Nos. 44 and 45, October 6; No. 46, October 8, 1941.

SAN DIEGO MARINE CONST. CO.
San Diego, Calif.

New Construction:

Four large wooden mine sweepers for U. S. Navy.

One 87′ wooden tug boat.

One 64′ wooden passenger ferryboat.

SEATTLE SHIPBUILDING AND DRY DOCK CO.
Seattle, Wash.

New Construction:

Four 136′ mine sweepers for U. S. Navy.

SEATTLE-TACOMA SHIPBUILDING CORP.
Tacoma, Wash.

PLANT No. 1

New Construction:

Hulls No. 6, Frederick Funston; No. 7, James O'Hara, two C-3 shelter deck type cargo steamers for U. S. Maritime Commission. To be converted on completion to U. S. Army troopships. Keel laying dates, April 21 and June 16, 1941. Launching dates, September 27 and **December 30, 1941.**

Hulls Nos. 8-11, four C-3 cargo ships for U. S. Maritime Commission. 492′ x 69′6″ x 42′6″ (molded); 8900 tons; 8500-hp steam turbine propulsion; cost $2,990,000. **Keel laying dates,** No. 8, June 18; No. 9, October 1; No. 10, October 27, 1941; **No. 11, January 11, 1942. Launching dates,** No. 8, October 21, 1941; **No. 9, January 15;** No. 10, February 14; No. 11, April 29, 1942. **Delivery dates, No. 8, January;** No. 9, April; No. 10, May; No. 11, July, 1942.

Hulls Nos. 12, Patapsco; 13, Rappahannock; 14, Rio Grande; 15, Wabash; 16, Susquehanna; five TI-MT-MI tankers for U. S. Navy. 310′9″ x 48′6″ x 19′9′. Keel laying dates, No. 12, February 17; No. 13, May 6; No. 14, May 10; No. 15, July 20; No. 16, August 3, 1942. Launching dates, No. 12, May 8; No. 13, July 18; No. 14, August 1; No. 15, October 3; No. 16, October 18, 1942. Delivery dates, No. 12, September 2; No. 13, October 28; No. 14, November 1, 1942; No. 15, January 15; No. 16, February 1, 1943.

Hulls Nos. 17-46, thirty C-3 cargo vessels for U. S. Maritime Commission. 492′ x 69′6″ x 42′6″; 8900 tons; 8500-hp steam turbine propulsion. Keel laid, No. 17, November 3; No. 18, November 27, 1941. Delivery dates, first, June, 1942; last, October, 1943.

SEATTLE PLANT

New Construction:

Twenty-five destroyers for U. S. Navy.

THE SHAIN MANUFACTURING CO.
Seattle, Washington

New Construction:

One model 49 trimmer ship, express cruiser, for Superior Packing Co., Alaska.

One 50′ commodore model trimmer ship for E. Ramey.

One 38′ sedan trimmer ship for U. S. Customs.

★ **Two 50′ trimmer ships** for U. S. Coast Guard. 12½′ beam; twin Chrysler Royals; 16 mph.

★ **One 50′ trimmer ship** for Dr. Chas. Ward. 12½′ beam; 165-hp Gray diesel; 16 mph.

STEPHENS BROS.
Stockton, Calif.

New Construction:

Three large wooden mine sweepers for U. S. Navy.

TODD-CALIFORNIA SHIPBUILDING CORP.
Richmond, Calif.

New Construction:

Thirty cargo vessels for British Purchasing Commission. 10,000 dwt; 416′ long, 57′ beam. Cost $50,000,000. First vessel, Ocean Vanguard, launched August 16, 1941.

TODD-SEATTLE DRY DOCKS
Seattle, Wash.

Conversion work.

UNITED ENGINEERING CO., LTD.
San Francisco, Calif.

New Construction:

Hulls Nos. 17-20, four 205′ Navy fleet tugboats, for U. S. Navy.

Hulls Nos. 21-24, four 205′ Navy fleet tugboats, for U. S. Navy.

WESTERN BOAT BUILDING CO., INC.
Tacoma, Wash.

New Construction:

Hulls Nos. 147-148, two U. S. Minesweepers, Y.M.S. 133-Y.M.S. 134. Keel laying dates, No. 147, June 23, 1941; No. 148, August 12, 1941. **Launching date, No. 147, December 18, 1941; No. 148, January 15, 1942.**

Hull No. 149, fishing boat for stock; 95′ x 26′.

WESTERN PIPE AND STEEL CO.
South San Francisco, Calif.

New Construction:

Hulls Nos. 62-65, 77-95, twenty-three C-3 cargo ships for U. S. Maritime Commission. 492′ x 69′ x 42′6″; 8900 tons; 8500-hp; steam propulsion; $2,990,000 each. Keel laying dates, No. 62, April 17; No. 63, May 29; No. 64, July 17; No. 65, September 30, 1941. Launching dates, No. 62, September 27, 1941.

WILLAMETTE IRON & STEEL CORP.
Portland, Ore.

New Construction:

Two minelayers, CM6, U. S. S. Catskill, and CM7, U. S. S. Ozark, for U. S. Navy.

Conversion:

★ **U. S. S. President Jackson** for U. S. Navy.

Atlantic, Lakes, Rivers

ALABAMA DRY DOCK & SHIPBUILDING CO.
Mobile, Ala.

New Construction:

Hulls Nos. 228-229, two tugs for Mobile Towing & Wrecking Co.

Hull No. 230, tug, for stock.

Hulls Nos. 231-243, thirteen all-welded Emergency cargo vessels for U. S. Maritime Commission. Cost $19,500,000.

Hull No. 244, 18,000-ton floating dock, for Todd Shipyards Corp., Galveston.

LESTER F. ALEXANDER CO.
New Orleans, La.

New Construction:

Three Type A-300 steel barges for Louisiana Materials Co.; 30′x110′x7′6″.

One tug, South Wind, for stock; 400-hp Atlas Imperial diesel.

One tug for stock; 120-hp Atlas Imperial diesel.

AMERICAN BRIDGE COMPANY
Pittsburgh, Pa.

New Construction:

Eight dump scows. 160′ x 50′6″ x 13′6″; for Panama Canal.

Ten coal barges for stock. 175′ x 26′ x 11′.

Sixteen sand barges for the Panama Canal. 160′ x 50′6″ x 13′6″.

Sixty coal barges for Carnegie-Illinois Steel Corp. 175′x26′x11′.

Five barges for U. S. Engineers Office, Panama Canal District. 126′x26′x11′.

★ **Fifteen barges** for Pennsylvania Railroad Co. 80′ x 30′ x 9′3″.

★ **Ten barges** for Pennsylvania Railroad Co. 80′ x 30′ x 9′.

AMERICAN CAR & FOUNDRY CO.
Wilmington, Delaware

New Construction:

Thirty-eight 45′ lighters, equipped with tanks for carrying liquids, for U. S. Navy. Total cost $1,020,262. **Delivered.**

Four 135′ mine sweepers for Navy Dept., Bureau of Supplies and Accounts. Total cost $1,340,000.

THE AMERICAN SHIP BUILDING CO.
Cleveland, Ohio

New Construction:

Eight mine sweepers (4 at Lorain, Ohio; 4 at Cleveland, Ohio) for U. S. Navy; 220′ O.A. x 32′ x 17′; diesel-electric propulsion; contract price, $13,736,000.

Fifteen 2500-ihp, three cylinder triple expansion engines for Maritime Commission design EC2-S-C1 cargo vessels.

★ **Two bulk freighters** for Pittsburgh Steamship Co. 614′ x 67′ x 35′; turbo-electric propulsion.

BATH IRON WORKS
Bath, Maine

New Construction:

Hulls Nos. 186-187, two cargo ships for American Export Lines. 400′ x 60′ x 39′. **Delivery dates, No. 186, December, 1941; No. 187, January, 1942.**

Hull No. 189, DD458, destroyer, for U. S. Navy. **Delivery date, January, 1942.**

Hulls Nos. 190-195, DD449-451, 467-469, six destroyers for U. S. Navy.

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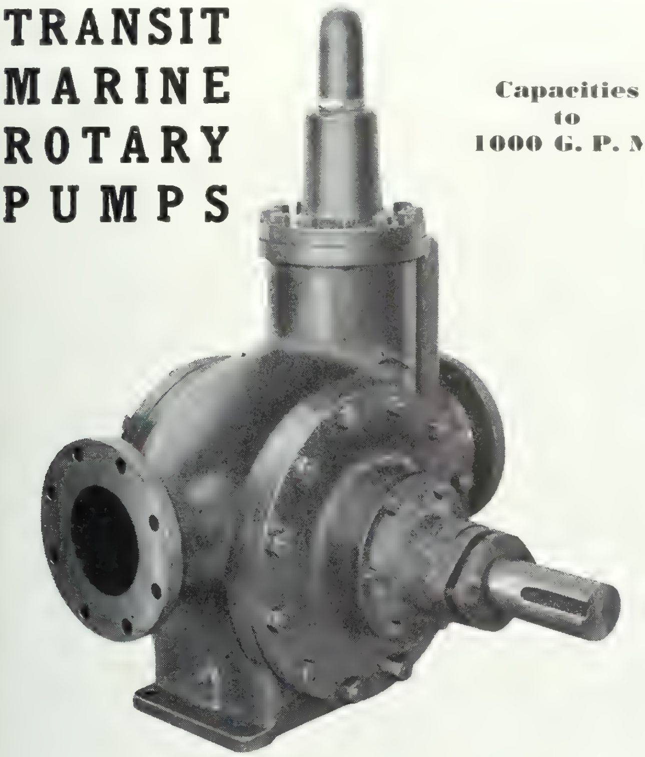

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Alcoa Pioneer
Alcoa Pilgrim
Alcoa Patriot
Alcoa Puritan
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Is being installed on scores of Life boats for Maritime Commission Vessels . . .

The Allen Manual Propelling Devices, acting also as rudders, eliminate clumsy, space-taking, back-breaking oars. They can be operated by anyone.

Each device consists of from four to eighteen offset handles mounted on fore and aft shaft, transmitting power to a vertical shaft by roller chain. This shaft in turn transmits power through double gears to the propeller shaft. No rudder or reversing mechanism is required as the propeller swings 360° in either direction, making it more effective for steering than a rudder.

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Better than 6 miles per hour by hand power with full ocean equipment

Hulls Nos. 196-206, DD507-DD517, eleven destroyers for U. S. Navy.

Hulls Nos. 208-213; DD629-DD631; DD 642-DD644; six destroyers for U. S. Navy.

BETHLEHEM STEEL COMPANY
Shipbuilding Division—Fairfield Yard
Baltimore, Md.

New Construction:

Hulls Nos. 2001-2062, sixty-two EC-2 type cargo vessels, for U. S. Maritime Commission. Keel laying dates, No. 2001, March 30; No. 2002, May 15; No. 2003, June 21; No. 2004, June 21; No. 2005, July 15; No. 2006, July 15; No. 2007, August 15; No. 2008, August 25; No. 2009, September 3; No. 2010, September 12; No. 2011, September 22; No. 2012, September 27; No. 2013, October 13, 1941. Launching date, No. 2001, September 27, 1941.

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Division—Fore River Yard
Quincy, Mass.

New Construction:

Hull No. 1478, Massachusetts, 35,000-ton battleship for U. S. Navy. Keel laid July 20, 1939. Launched September 23, 1941.

Hulls Nos. 1479, San Diego; and 1480, San Juan; two 6000-ton cruisers for U. S. Navy. Keels laid March 27 and May 15, 1940. Launching date, No. 1479, July 26; No. 1480, September 6, 1941.

Hull No. 1484, cargo vessel for U. S. Maritime Commission. 450′ x 66′ x 42′3″; 16½ knots; geared turbines and water tube boilers; 14,500 tons. Launching date November 16, 1940.

Hulls Nos. 1490-1491, two tankers for Sinclair Refining Co., 10,700 tons dwt. **Keel** laid, No. 1490, May 31; No. 1491, September 29. Launching dates, No. 1490, September 27, 1941.

Hulls Nos. 1492-1493, two tankers for Sinclair Refining Co. 15,450 tons dwt. Keel laying date, No. 1492, August 9; **No. 1493, December 6, 1941. Launching date, No. 1492, December 6, 1941.**

Hulls Nos. 1494-1497, four heavy cruisers for U. S. Navy. Keel laying dates, No. 1494, May 26; No. 1495, June 30; No. 1496, September 3; No. 1497, October 9, 1941.

Hulls Nos. 1498-1501, four light cruisers for U. S. Navy. Keel laid, No. 1498, September 23, 1941.

Hulls Nos. 1502-1503, two light cruisers for U. S. Navy.

Hulls Nos. 1504-1507, four heavy cruisers for U. S. Navy.

Hulls Nos. 1508-1511, four aircraft carriers for U. S. Navy. Keel laying date, No. 1508, July 15; No. 1509, September 15, 1941.

Hull No. 1515, trawler. Keel laid July 12, 1941. Launched, November 4, 1941.

Hulls Nos. 1516-1519, four 1650-ton destroyers for U. S. Navy. Keel laying date, No. 1516, May 1; No. 1517, May 20, 1941.

Hulls Nos. 1520-1521, two 1620-ton destroyers for U. S. Navy. (Transferred from Bethlehem San Pedro yard.)

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Div.—Sparrows Point Yard
Sparrows Point, Md.

New Construction:

Hull No. 4348, C-1 cargo vessel. LOA 416′, LBP 395′, beam 60′, depth 37′6″. Keel laid March 13, 1941.

Hulls Nos. 4351-4352, two cargo vessels for Seas Shipping Co. 450′ x 66′ x 34′; 6300 hp; 8500 gross tons. Keel laying dates, No. 4351, December 12, 1940; No. 4352, January 22, 1941. Launching date, No. 4351, July 26, No. 4352, August 29, 1941.

Hulls Nos. 4354-4356, three oil tankers for Socony Vacuum Oil Co. 487′6″ x 68′ x 37′; 12,000 hp, 9800 gross tons. Keel laying dates, No. 4354, September 16, 1940; No. 4355, April 23; No. 4356, July 8, 1941. Launching date, No. 4354, July 1, 1941.

Hulls Nos. 4358-4359, two oil tankers for Socony Vacuum Oil Co. 487′6″ x 68′ x 37′; 12,000 hp; 9800 gross tons. Keel laid, No. 4358, August 1, 1941.

Hulls Nos. 4360-4361, two oil tankers for Union Oil Co. 442′ x 64′ x 34′10″; 3500 hp; 8000 gross tons. Keel laying date, No. 4360, June 18, 1941.

Hulls Nos. 4362-4364, three cargo and passenger vessels for Mississippi Shipping Co. 465′ x 65′6″ x 39′9″; 7800 hp; 8300 gross tons. Keel laid, No. 4362, September 4, 1941.

Hull No. 4365, oil tanker for Richfield Oil Co. 442′ x 64′ x 34′10″; 3500 hp; 8000 gross tons. Keel laid May 21, 1941.

Hulls Nos. 4367-4368, two oil tankers for Panama Transport Co. 487′6″ x 68′ x 37′; 7000 hp; 9800 gross tons.

Hull No. 4369, oil tanker for Continental Oil Co. 442′ x 64′ x 34′10″; 3500 hp; 8000 gross tons.

Hulls Nos. 4371-4372, two oil tankers for Gulf Oil Co. 442′ x 64′ x 34′10″.

Hull No. 4373, tanker for Panama Transport Co. 487′6″ x 68′ x 37′; 7000 hp; 9800 gross tons.

Hulls Nos. 4374-4375, two tankers for Union Oil Co. of Calif. 487′6″ x 68′ x 37′; 7000 hp; 9800 gross tons.

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Hulls Nos. 4376-4377, two tankers for Socony Vacuum Oil Co. 487′6″ x 68′ x 37′; 4800 hp; 9800 gross tons.

BETHLEHEM STEEL COMPANY, INC.

Shipbuilding Div.—Staten Island Yard
Staten Island, N. Y.

New Construction:

Hulls Nos. 8021-8022, two destroyers for U. S. Navy.

Hulls Nos. 8023-8029; 8033-8035; ten destroyers for U. S. Navy.

BURGER BOAT CO.

Manitowoc, Wisconsin

New Construction:

One ferryboat, 110′ x 32′ x 8′, 330-hp Gray diesel engine.

Six 135′ wooden motor mine sweepers for U. S. Navy.

★ Two 110′ Subchasers.

IRA S. BUSHEY & SONS, INC.

Brooklyn, N. Y.

New Construction:

Hull No. 498, 156-foot oil tanker. Delivery date, February, 1942.

Hull No. 499, 156-foot oil tanker. Delivery date, March, 1942.

Hull No. 500, wooden drydock section for Bethlehem Steel Co. **Delivered.**

Hulls Nos. 503-504, two 100′ steel tugs, for U. S. Maritime Commission. 805-hp.

Hulls Nos. 505-506, two drydocks, for U. S. Navy.

Hulls Nos. 507-509, three 100′ steel tugs, for U. S. Navy. 805 hp.

Hull No. 510, deck scow for A. J. Harper, Baltimore, Md. 117′ x 36′ x 10′. **Delivered.**

Hulls Nos. 511-513, three 100′ steel tugs, for Maritime Commission. 805-hp.

CALUMET SHIPYARD & DRY DOCK CO.

Chicago, Illinois

New Construction:

Four all-welded distribution box boats for Quartermaster Corps., U. S. Army, 65′ x 18′, diesel propelled. Total cost $212,000. **Delivered.**

Hull No. 126, all-welded steel towboat for Ashland Oil Refining Co., 145′ x 32′ x 9′, 1600-hp diesel.

Hulls Nos. 131-132, two oil barges, standard river type, for Ashland Oil & Refining Co. 195′ x 35′ x 10′.

Hulls Nos. 133-135, 142-143, two three-barge units for Ashland Oil & Refining Co. Each unit, 195′ x 35′ x 10′; center section square on both ends; both end sections square on one end, raked on opposite end.

Hull No. 136, one river towboat for Ashland Oil & Refining Co. 145′ x 32′ x 9′. 1600-hp diesel.

Hulls Nos. 137-141, five tugs for U. S. Maritime Commission. 1050-hp.

CHARLESTON SHIPBUILDING & DRYDOCK COMPANY

Charleston, South Carolina

New Construction:

Eight 205′ mine sweeping fleet tugs. Delivery for all by September, 1943.

CONSOLIDATED SHIPBUILDING CORP.

Morris Heights, N. Y.

New Construction:

Eleven 165′ steel submarine chasers for U. S. Navy.

CONSOLIDATED STEEL CORP. OF TEXAS

Orange, Texas

New Construction:

Two oil barges for C. F. Pillot, 165′ x 36′ x 10′3″.

One transportation barge for Shell Oil Co., Inc. 80′ x 24′ x 5′.

Three transportation barges for Shell Oil Co., Inc. 40′ x 16′ x4′6″.

CRAMP SHIPBUILDING COMPANY

Philadelphia, Pa.

New Construction:

Six cruisers, Cleveland class, for U. S. Navy.

Four floating workshops for U. S. Navy.

DEFOE BOAT & MOTOR WORKS

Bay City, Mich.

New Construction:

Hulls Nos. 171-174, four mine sweepers for U. S. Navy, 220′ long.

Hulls Nos. 175-186, twelve 174′ escort vessels for U. S. Navy.

Hulls Nos. 187-194, eight 174′ sub-chasers for U. S. Navy.

Hulls Nos. 195-198, four 145′ tugs for U. S. Navy.

Hulls Nos. 199-204, five subchasers for U. S. Navy.

DELTA SHIPBUILDING CORP.

New Orleans, Louisiana

New Construction:

Twenty-five EC-2 Emergency type vessels for U. S. Maritime Commission. 416′ x 56′10¾″ x 37′4″; 2500-hp triple expansion engine.

THE DRAVO CORPORATION

Engineering Works Division
Pittsburgh, Pa., and Wilmington, Del.

New Construction:

Hulls Nos. 1836-1840, five 165′ type PC submarine chasers for U. S. Navy, Washington, D. C. 1675 gross tons.

Hull No. 1868, 25-ton floating crane, for U. S. Navy Dept., Washington, D. C. 335 gross tons.

Hulls Nos. 1876-1877, two floating caisson gates for U. S. Navy, Philadelphia Navy Yard; 2330 gross tons.

Hull No. 1903, floating caisson gate for U. S. Navy, Norfolk Navy Yard; 1330 gross tons.

Hulls Nos. 1907-1911, five 165′ type AM mine sweepers for Bureau Supplies & Accounts, U. S. Navy Dept., Washington, D. C.; 1675 gross tons.

Hulls Nos. 1912-1916, five 165′ type PC submarine chasers for Bureau of Supplies & Accounts, U. S. Navy Dept., Washington, D. C.; 1675 gross tons.

Hulls Nos. 1928-1933, six welded steel deck barges for Delaware, Lackawanna & Western R. R., New York City. 100′ x 30′ x 9′6″; 1392 gross tons.

Hulls Nos. 1946-1955, ten W-7 welded steel coal barges for Hillman Coal & Coke Co., Pittsburgh, Pa. 175′ x 26′ x 11′; 4720 gross tons.

Hull No. 1956, 25-ton floating crane for Charleston, S. C. Navy Dept., Washington, D. C.; 335 gross tons.

Hulls Nos. 1967-1972, six welded oil barges; No. 1967, for Standard Oil Co. of California; Nos. 1968-1970, for Ashland Oil and Refining Co.; No. 1971, for California Transportation Co.; No. 1972, for Canal Barge Co., New Orleans, La. 195′x35′x9′9″; 3588 gross tons.

Hulls Nos. 1973-1976, four welded sand and gravel barges for Keystone Sand Div. 135′ x 27′ x 8′; 1020 gross tons.

Hulls Nos. 1977-1986, ten type W-7 welded bulk cargo barges for Pittsburgh Coke & Iron. 175′ x 26′ x 11′; 4720 gross tons.

Hulls Nos. 1987-1992, six welded oil barges; No. 1987, for Canal Barge Co., New Orleans, La.; Nos. 1988-1992, for Cornelius Kroll, Houston, Texas. 195′ x 35′ x 9′9″; 3588 gross tons.

Hulls Nos. 1994-2009, sixteen covered lighters for Bureau of Supplies and Accounts, Navy Dept. 8320 gross tons.

Hulls Nos. 2010-2011, two welded side-dump scows for Bureau S. & A., Navy Dept., Washington, D. C. 115′ x 28′ x 7′6″; 240 gross tons.

Hulls Nos. 2012-2021, ten welded steel car floats, for Pennsylvania R. R., Philadelphia, Pa. 250′ x 34′ x 9′1″; 5940 gross tons.

Hulls Nos. 2022-2030, nine welded deck barges, for Erie R. R. 100′ x 30′ x 9′6″; 2088 gross tons.

Hull No. 2031, welded steel car float for Erie R. R. 250′ x 34′ x 9′1″; 594 gross tons.

Hulls Nos. 2032-2041, ten type W-7 welded coal barges for Weirton Steel Co. 175′ x 26′ x 11′; 4720 gross tons.

Hull No. 2042, caisson, for drydock for Bayonne Associates, Bayonne, N. J. 1330 gross tons.

Hulls Nos. 2043-2058, sixteen welded steel coal barges for Wheeling Steel Corporation. 10′ x 26′ x 10′8″; 9040 gross tons.

Hull No. 2059, welded cargo box barge, for Lone Star Cement Co., New York City. 180′ x 40′ x 9′6″; 607 gross tons.

Hull No. 2060, caisson, for drydock No. 2 at Charleston Navy Yard. 375 gross tons.

Hull No. 2061, caisson, for drydock No. 1 at Charleston Navy Yard. 520 gross tons.

Hulls Nos. 2062-2065, four 165′ submarine chasers, for Bureau of Ships, Navy Department, Washington, D. C. 1340 gross tons.

★ Hulls Nos. 2066-2073, one floating steel drydock (consisting of 8 segmental pontoons; 2 at 390 tons, 6 at 1470 tons), for Maryland Dry Dock Co. 9600 gross tons.

★ Hulls Nos. 2074-2077, four welded steel oil barges for Canal Barge Co., New Orleans, La. 195′ x 35′ x 9′9″.

ELECTRIC BOAT COMPANY

Groton, Conn.

New Construction:

Two submarines, SS206, Grampus; SS208, Grayback; for U. S. Navy. Cost $2,937,000 each. Keels laid, Grampus, February 4, 1940; Grayback, April 3, 1940.

One submarine, SS204, Mackeral, for U.S. Navy. Keel laid October 6, 1939. Launched September 28, 1940.

Three submarines, SS212, Gato; SS213, Greenling; SS214, Grouper; for U. S. Navy. Cost $2,957,000. Keels laid, Gato, October 5, 1940; Greenling, November 12, 1940.

Thirteen submarines, SS215, Growler; SS216, Grunion; SS217, Guardfish; SS218, Albacore; SS219, Amberjack; SS220, Barb; SS221, Blackfish; SS222, Bluefish; SS223, Bonefish; SS224, Cod; SS225, Cero; SS226, Corvina; SS227, Darter. Cost $2,795,000 each.

Twenty-five submarines, SS240-SS264.

THE FEDERAL SHIPBUILDING AND DRY DOCK COMPANY

Kearny, N. J.

New Construction:

Hulls Nos. 168-169, CL51, Atlanta; and CL52, Juneau; two 6000-ton cruisers for U. S. Navy. Keels laid April 22 and May 27, 1940. Launching date, No. 168, September 6; No. 169, October 25, 1941.

Hulls Nos. 181-186, six C-2 cargo ships for U. S. Maritime Commission. Keel laid, No. 181, June 5; No. 182, October 2; No. 183, October 25; No. 184, November 17; **No. 185, December 9, 1941. Launching** date, No. 181, November 12, 1941.

Hulls Nos. 192-193, two tankers for Sinclair Refining Co. 15,450 dwt. Keel laid, No 193, July 21, 1941. **Launching date, No. 192, December 6, 1941.**

Hulls Nos. 196-197, two destroyers for U. S. Navy. Keels laid, Nos. 196-197, December 16, 1940. Launching date, No. 196, September 26, 1941.

Hulls Nos. 198-203, six destroyers for U. S. Navy. Keels laid, Nos. 198-199, October 2; Nos. 200-201, November 27, 1941.

Hulls Nos. 204-205, two destroyers for U. S. Navy.

Hulls Nos. 206-213, eight destroyers for U. S. Navy. Keels laid, No. 206 and 207, February 11; No. 208 and 209, July 31; Nos. 210-211, September 15; Nos. 212-213, November 3, 1941.

Hulls Nos. 214-218, five destroyers for U. S. Navy.

Hulls Nos. 219-221, three cruisers for U. S. Navy.

Hulls Nos. 222-227, six destroyers for U. S. Navy.

Hulls Nos. 229-232, four destroyers for U. S. Navy.

Hulls Nos. 233-240, eight C-2 cargo ships for the U. S. Maritime Commission.

Hulls Nos. 241-264, twenty-four C-2 cargo vessels for U. S. Maritime Commission.

GREAT LAKES ENGINEERING WORKS
River Rouge, Michigan

New Construction:

Hulls Nos. 287-289, three bulk freighters for Pittsburgh S. S. Co. 640′ x 67′ x 35′; 18,000 dwt; 4000-hp steam turbine engines. Keel laying dates, No. 287, June 16; No. 288, July 1; No. 289, August 6, 1941.

★ **Ten bulk carriers** for U. S. Maritime Commission. 595′ x 60′ x 35′.

HENRY C. GREBE & CO., INC.
Chicago, Illinois

New Construction:

Two 135′ mine sweepers for U. S. Navy.

Five 65′ steel harbor tugs.

GREENPORT BASIN & CONST. CO.
Greenport, L. I., N. Y.

New Construction:

Twelve 135′ motor mine sweepers YMS 20-31, for U. S. Navy.

GULFPORT BOILER & WELDING WORKS, INC.
Port Arthur, Texas

New Construction:

Hulls Nos. 191-194, four diesel-electric tugs, for General Motors Corp., Cleveland Diesel Engine Division. 100′ x 24′ x 12′4″; 1000 shp. **Delivery dates, No. 191, January 3; No. 192, January 21;** No. 193, February 28; No. 194, March 28, 1942.

★ **Hulls Nos. 203-204, two 143-foot rescue vessels,** for General Motors Corp.; 1500-shp diesel-electric drive.

GULF SHIPBUILDING CORP.
Chickasaw, Ala.

New Construction:

Four 2100-ton destroyers for U. S. Navy. **Launching dates,** first, November 15; **second, December, 1941.**

Two cargo vessels for Waterman Steamship Corporation. 445′ x 63′ x 40′6″; shelter deck type; geared turbine drive; 15½ knots service speed.

Six 220′ mine sweepers, for U. S. Navy.

Fourteen C-2-S-E1 cargo vessels for U. S. Maritime Commission. 445′ x 63′ x 40′6″; shelter deck type; geared turbine drive; 15½ knots service speed.

HOUSTON SHIPBUILDING CORP.
Houston, Texas

New Construction:

Hulls Nos. 1-37, thirty-seven EC-2 cargo vessels for U. S. Maritime Commission. Estimated delivery dates, first, January 15, 1942; last, February 24, 1943.

THE INGALLS SHIPBUILDING CO.
Pascagoula, Miss., and Decatur, Ala.

Pascagoula

New Construction:

Hulls Nos. 268, 297-299, four C-3-IN passenger-cargo vessels for U. S. Lines. Completion dates, May, November, December, 1942; and February, 1943.

Hulls Nos. 265-267, three C-3-P passenger-cargo vessels for American-South African Line, Inc. **Completion dates, December 18, 1941;** January and February, 1942.

Hulls Nos. 293-296, four C-3-S-A-2 cargo vessels for U. S. Maritime Commission. Completion dates, February, March, May and June, 1942.

Hulls Nos. 325-336, twelve C3-S-A2 cargo vessels for the U. S. Maritime Commission. 492′ x 69′6″ x 42′6″. Keel layings, from April 30 to December 31, 1943.

Hulls Nos. AN 1-4, four net layers for U. S. Navy.

Decatur

New Construction:

Hulls Nos. 343-344, two 9000-bbl. oil barges for Eddie Erlbacher, Cape Girardeau, Mo. 195′ x 35′ x 9′9″. **Delivery date, December 24, 1941.**

One 9000-bbl. oil barge for Standard Oil Company, Cleveland, Ohio. 195′ x 35′ x 9′9″. **Delivery date, January 1, 1942.**

Hulls Nos. 345-348, four 1300-bbl. oil barges, for Illinois Oil Company, Rock Island, Ill. 230′ x 40′ x 9′6″. Delivery date, April 20, 1942.

Hull No. 349, derrick barge, for U. S. Engineer Department, Galveston, Texas. 80′ x 40′ x 6′6″. Delivery date, March, 1942.

Hulls Nos. 351-354, four cargo barges, for Quartermaster Corps, U. S. Army. 210′ x 40′ x 15′. Delivery date, April, 1942.

GEORGE LAWLEY & SON CORP.
Neponset, Mass.

New Construction:

Twelve 45′ tank lighters for U. S. Navy.

Two 127′ fish trawlers for Booth Fisheries Co. Diesel powered.

Five boats for repair work for U. S. Navy.

Ten 165′ submarine chasers for U. S. Navy.

Conversion:

90′ launch Cutty Sark to U. S. Army launch Captain Dean C. Howard.

LEVINGSTON SHIPBUILDING CO.
Orange, Texas

New Construction:

Hull No. 185, ocean tug for U. S. Navy; 135′ x 30′ x 17′6″.

Hulls Nos. 194-195, two tugs for stock. 66′ x 17′ x 8′; 300-hp Atlas diesel.

Hulls No. 202, tug, for Pan American. 74′ x 20′ x 9′; 400-hp Atlas diesel.

Hull No. 203, coastwise tug for stock. 85′ x 24′ x 9′11″; 600-hp Atlas diesel.

Hulls No. 205; 207-210; five 8500-bbl. oil barges for Pan American. 173′ x 8′6″ x 39′.

Hull No. 206, tug, for River Terminals. 74′ x 20′ x 9′; 400-hp Atlas diesel.

Hulls Nos. 211-212, two tugs. 105′ x 25′ x 9′6″; 1000-hp General Motors diesel.

Hull No. 213, tug, for stock. 85′ x 23′ x 9′6″; 600-hp Superior diesel.

Hull No. 214, tug, for River Terminals Corp. 74′ x 20′ x 9′; 400-hp Atlas diesel.

Hulls Nos. 217-220, four 143′ ocean tugs for General Motors Sales Corp.

★ **Hulls Nos. 221-225, five barges** for G. B. Ziegler. 205′ x 40′ x 19′10″.

★ **Hulls Nos. 226-228, three barges** for Crown Central Petroleum Corp. 173′ x 20′ x 9′.

★ **Hull No. 229, barge** for Crown Central Petroleum Corp. 74′ x 20′ x 9′.

THE LUDERS MARINE CONSTRUCTION CO.
Stamford, Connecticut

New Construction:

Two submarine chasers, PC505-PC506, for U. S. Navy.

Nine small subchasers for U. S. Navy.

Seven 165′ steel subchasers for U. S. Navy. Keel laid, first vessel, July, 1941.

Four wooden subchasers for U. S. Navy.

MANITOWOC SHIPBUILDING CORP.
Manitowoc, Wisconsin

New Construction:

Ten submarines, SS265-274, for U. S. Navy.

MARIETTA MANUFACTURING CO.
Point Pleasant, W. Va.

New Construction:

Net tender, YN16, for the U. S. Defense Commission. Launching date, July 2, 1941. **Delivery date, December 12, 1941.**

Hulls Nos. 474-489, sixteen all-steam propelled mine planters, for the U. S. Army. Cost about $12,000,000. **Keel laying dates,** No. 474, May 14; No. 475, May 20; No. 476, June 24; No. 477, July 11; No. 478, November 5; **No. 479, December 3, 1941. Launching date,** No. 474, November 4; **No. 475, December 2, 1941.**

MARINE IRON & SHIPBUILDING CO.
Duluth, Minnesota

New Construction:

Hulls Nos. 70-72, three 180′ cutters of "Cactus" type for U. S. Coast Guard.

JOHN H. MATHIS CO.
Camden, N. J.

New Construction:

Four anti-submarine net tenders for U. S. Navy.

Three 220′ mine sweepers for U. S. Navy.

MIAMI SHIPBUILDING CORP.
Miami, Florida

New Construction:

Thirty-five high-speed, off-shore patrol boats.

NEWPORT NEWS SHIPBUILDING & DRYDOCK CO.
Newport News, Va.

New Construction:

Hull No. 378, battleship 58, Indiana, for U. S. Navy. Keel laid November 20, 1939.

Hull No. 385, aircraft carrier No. 8, Hornet, for U. S. Navy. Launched December 14, 1940.

Hulls Nos. 390-391 (CL62-CL63), two light cruisers for U. S. Navy.

Hulls Nos. 392-394 (CV9-CV11), three aircraft carriers for U. S. Navy.

Hulls Nos. 395-398 (CV12-CV15), four aircraft carriers for U. S. Navy.

Hulls Nos. 399-400 (CL80-CL81), two light cruisers for U. S. Navy.

THE NEW YORK SHIPBUILDING CORPORATION
Camden, N. J.

New Construction:

BB57, South Dakota, battleship for U. S. Navy. Keel laid July 5, 1939.

AR5, Vulcan, repair ship for U. S. Navy. Keel laid December 26, 1939.

CL55, Cleveland; and CL56, Columbia; two cruisers for U. S. Navy. Order placed March 23, 1940.

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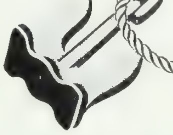

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Todd Galveston Dry Docks Inc. . . . . *Galveston*
Todd-Johnson Dry Docks Inc. . . . . *New Orleans*
Todd Mobile Dry Docks Inc. . . . . *Mobile*
Seattle-Tacoma Shipbuilding Corp., *Seattle and Tacoma*
Todd-Bath Iron Shipbuilding Corp. . *So. Portland, Me.*
Todd-California Shipbuilding Corp., *Richmond, Calif.*
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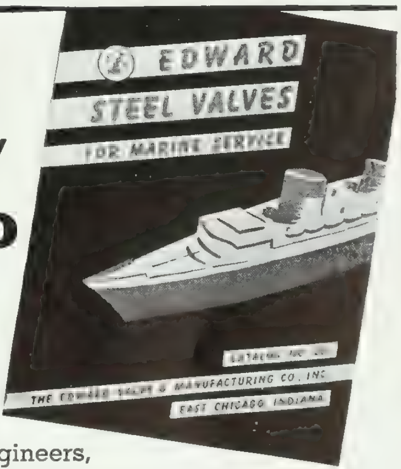

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AV7, Currituck, seaplane tender for U. S. Navy.

CL59-CL61, three cruisers for U. S. Navy.

CB1-CB6, six cruisers for U. S. Navy.

CL76, four cruisers for U. S. Navy.

NORTH CAROLINA SHIPBUILDING CO.
Wilmington, N. C.

New Construction:

Hulls Nos. 1-37, thirty-seven all-welded steel EC-2 cargo vessels for U. S. Maritime Commission. Keel laying dates, No. 1, May 22; No. 2, May 22; No. 3, May 28; No. 4, August 22; No. 5, September 3; No. 6, September 4; No. 7, October 12; No. 8, October 21, 1941.

THE PUSEY & JONES CORP.
Wilmington, Del.

New Construction:

Hull No. 1076, C-1A cargo ship. Launched September, 1941. **Delivery date, December, 1941.**

Hulls Nos. 1082, Hains; and 1083, Hoffman; two seagoing hopper dredges for War Dept., U. S. Engineers Office, Philadelphia, Pa. 215′10½″ x 40′ x 15′6″; approx. 2000 gross tonnage; diesel-electric propulsion, 950 shp. Delivery dates, February and August, 1942.

Hulls Nos. 1084-1093, ten C-1A type cargo ships for U. S. Maritime Commission. 412′3″ x 60′ x 37′6″; 9000 dwt; 4000-hp steam turbine propulsion.

R. T. C. SHIPBUILDING CORP.
Camden, N J.

New Construction:

Hull No. 137, 995-ton motor tanker. 190′ x 36′ x 12′.

Hulls Nos. 138-139, two 985-ton motor tankers. 190′ x 36′ x 12′.

Hulls Nos. 140-142, three tankers for U. S. Navy.

SOUTH PORTLAND SHIPBUILDING CORP.
Portland, Maine

New Construction:

Hulls Nos. 201-216, sixteen EC-2 type cargo vessels, for U. S. Maritime Commission.

SUN SHIPBUILDING AND DRY DOCK COMPANY
Chester, Pa.

New Construction:

Hulls Nos. 202-206, five C-2 cargo vessels for U. S. Maritime Commission. 474′ x 63′ x 40′6″; 7400 gross tons; diesel propelled; 7500 shp; 16 knots. **Launching dates,** No. 202, August 23; No. 203, September 20; No. 204, October 18; **No. 205, December 20; No. 206, December 30, 1941.**

Hulls Nos. 213-216; 219-220, six tankers for Panama Transport Co. 547′3″ x 70′ x 40′; 11,400 gross tons; 7500 shp; 15 knots speed. Launching and delivery dates, 1942-1943.

Hull No. 218, tanker for Standard Oil Co. of N. J. 547′3″ x 70′ x 40′; 11,400 gross tons; 7500 shp; 15 knots speed. Launching date, September, 1941. **Delivery date, December, 1941.**

Hulls Nos. 221-222, two tankers for Keystone Tankship Corp. 520′ x 68′ x 37′; 10,600 gross tons; turbine; 12,000 shp; 16½ knots. Keel laying dates, No. 221, June 12; No. 222, September 11, 1941. Launching dates, No. 221, October 4, 1941; No. 222, January 17, 1942.

Hulls Nos. 223-225, three tankers for The Texas Co. 513′10″ x 68′ x 36′; 9300 gross tons; turbine; 9000 shp; 16 knots. Keels laid, No. 223, August 6; No. 224, October 2; No. 225, October 23, 1941. **Launching date, No. 223, January 6, 1942.** Delivery dates, 1942.

Hull No. 226, tanker for Kaymar Tankship Corp. 520′ x 68′ x 37′; 10,600 gross tons; turbine; 12,000 shp; 16½ knots. **Keel laying date, December, 1941.**

Hulls Nos. 227-228, two tankers for Seamar Tankship Corp. 520′ x 68′ x 37′; 10,600 gross tons; turbine; 12,000 shp; 16½ knots. Keel laying dates, 1942.

Hull No. 230, tanker for Atlantic Refining Co. 474′ x 65′ x 37′; 8000 gross tons; turbo-electric; 5000 shp; 14½ knots. Launching date, September 19, 1941. Delivery date, 1942.

Hulls Nos. 231-232, two tankers for Keystone Tankship Corp. 520′ x 68′ x 37′; 10,600 gross tons; turbine; 12,000 shp; 16½ knots. Delivery date, 1942.

Hulls Nos. 233 and 240, two tankers for Gulf Oil Corp. 485′ x 68′ x 36′; turbine propelled; 14½ knots. Delivery dates, August, 1942, and December, 1942.

Hull No. 234, tanker for Sun Oil Co. 547′3″ x 70′ x 40′; 11,400 gross tons; diesel propelled; 7500 shp; 15 knots. Delivery date, 1942.

Hulls Nos. 235 and 237, two tankers for Standard Oil Co. of N. J. 547′3″ x 70′ x 40′; 11,400 gross tons; turbine; 7500 shp; 15 knots. Delivery date, 1942.

Hull No. 236, tanker for Atlantic Refining Co. 543′10″ x 70′ x 40′; 11,600 gross tons; turbo-electric; 5000 shp; 13 knots. Launched, November 15, 1941. Delivery date, 1942.

Hulls Nos. 238-239, two tankers for Standard Oil Co. of Calif. 521′ x 70′ x 40′; turbine propelled; 15½ knots. Delivery dates, November and December, 1942.

Hulls Nos. 241-312, seventy-two tankers.

TAMPA SHIPBUILDING CO.
Tampa, Fla.

New Construction:

Hulls Nos. 37-40, four C-2 type cargo vessels for U. S. Navy. 459′ x 63′ x 31′6″; 9291 dwt tons.

Three destroyer tenders, Piedmont, Sierra and Yosemite.

TODD-BATH SHIPBUILDING CORP.
Bath, Maine

New Construction:

Hulls Nos. 1-30, thirty cargo vessels for British Purchasing Commission. Cost $50,000,000. Keel laying dates, No. 1, May 24; No. 2, June 4; No. 3, June 18; No. 4, June 18; No. 5, August 2; No. 6, July 16; No. 7, July 25, 1941. **Launching dates, Nos. 1-2, December 20, 1941; Nos. 3-4, January 15;** Nos. 5, 6 and 7, February 15, 1942.

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Two all-welded steel oil barges, 180′x36′ x 9′.

Two steel tugs, 75′ x 19′ x 8′6″.

WHEELER SHIPBUILDING CORP.
Whitestone, N. Y.

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WHEELER SHIPYARDS, INC.
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F. M. Hurlbert, Chief	MS, 500 Tons	O

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Name and Grade	Class	Condition
J. L. Adamec, 1st Asst.	SS, any GT	RG
T. S. Langford, 1st Asst.	SS, any GT	RG
A. U. Longnecker, 1st Asst.	SS, any GT	RG
J. McNulty, 1st Asst.	SS, any GT	RG
F. D. Kerr, 3d Asst.	SS, any GT	O
D. G. Hill, Chief	MS, any GT	O
C. O. Mulligan, Chief	MS, any GT	O

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K. Duncan, Chief	SS, any GT	RG
F. Fanning, Chief	SS, any GT	RG
E. E. Flep, Chief	SS, any GT	RG
R. E. Sullivan, Chief	SS, any GT	RG
G. G. Gulvin, 1st Asst.	SS, any GT	RG
D. B. Bivin, 1st Asst.	SS, any GT	RG
D. B. Martin, 1st Asst.	SS, any GT	RG
W. T. Charpier, 2d Asst.	SS, any GT	O
H. T. O'Neill, 2d Asst.	SS, any GT	O
O. T. Pout, 2d Asst.	SS, any GT	O
E. I. Brown, 2d Asst.	SS, any GT	RG
J. H. Foye, 2d Asst.	SS, any GT	RG
J. F. Irvine, 2d Asst.	SS, any GT	RG
M. D. Czaple, 3d Asst.	SS, any GT	O
L. J. Green, 3d Asst.	SS, any GT	O
R. H. Ramsey, 3d Asst.	SS, any GT	O
P. F. Ward, 3d Asst.	SS, any GT	O
O. N. Baker, Chief	MS, any GT	O
G. G. Phelps, Chief	MS, any GT	O
J. H. McHone, 2d Asst.	MS, any GT	O
J. F. Irvine, 2d Asst.	MS, any GT	O
R. M. Wimer, 3d Asst.	MS, any GT	O

JUNEAU, ALASKA

Name and Grade	Class	Condition
A. R. Vann, 2d Asst.	SS, any GT	O

Deck Officers' Licenses for November

SAN PEDRO

Name and Grade	Class	Condition
A. P. E. Kurtz, Master	SS, any GT	RG
L. L. Smith, Master	SS, any GT	RG
D. C. Odell, 3d Mate	SS, any GT	O

PORTLAND

Name and Grade	Class	Condition
T. E. Burns, 3d Mate	SS & MS, any GT	O

SEATTLE

Name and Grade	Class	Condition
A. L. Larsson, Chief	SS, any GT	RG
S. T. Sorensen, 2d Mate	SS, any GT	O

SAN FRANCISCO

Name and Grade	Class	Condition
R. J. Raymer, Master	SS, any GT	RG
H. A. Shutz, Master	SS, any GT	RG
R. H. Faulkner, Chief	SS, any GT	RG
E. E. Griffitts, Chief	SS, any GT	RG
H. C. Dupuis, 2d Mate	SS, any GT	RG
R. P. Leupold, 2d Mate	SS, any GT	RG
L. V. Mitchell, 2d Mate	SS, any GT	RG
F. E. Snell, 2d Mate	SS, any GT	RG
L. Raahauge, Pilot	SS, any GT	O
H. B. Silveira, Pilot	SS, any GT	O

JUNEAU, ALASKA

Name and Grade	Class	Condition
E. R. Davie, Master	MS & SS, any GT	O
P. Thomeson, Chief	CW MS & SS, any GT	RG
T. Odegaard, 2d Mate	CW MS & SS, 1000 tons	RG
J. C. Corey, 3d Mate	CW MS & SS, 2500 tons	O

Abbreviations: SS is steamship; MS is motorship; GT is gross tonnage; O is original license; RG is raise of grade. All of these licenses are for ocean service.

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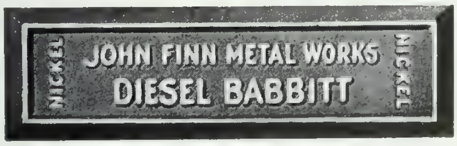

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Furnace Inspection Door, a new four-page circular, describing the furnace inspection door has just been issued by the Gillette Kiln Sales Company, Pittsburgh, Pa.

This illustrated circular contains information as to construction, operation details and installation of this door—an inspection door which is applicable to various types of industrial furnaces, boilers and kilns. The Gillette door was purposely designed to give dependable, long life operation under continual high heats up to 2500° F. Copies of this new literature will be furnished gratis upon request.

Incandescent Searchlights for Marine Use. This 12-page pamphlet in blue and gold is General Electric Co.'s No. 9800. It gives a general description of incandescent marine type searchlight development and application. Specifications and illustrations fully cover: the 18-inch general-purpose searchlight; the 12-, 18- and 24-inch heavy-duty searchlights; and flood lights with pilot-house control.

Welding Procedures, a clearly written, conveniently grouped, 55-page book has just been published by Air Reduction. Single copies are available on request.

By use of these cost data sheets and by gaining a keener appreciation of the fields for which gas or arc welding are particularly fitted, the operator will be able to produce better welds at less cost.

Boats Powered with Caterpillar Diesels. Under this title diesel power in the marine field is portrayed in a 16-page booklet, just published by Caterpillar Tractor Co.

The publication tells an interesting word and picture story of boat owners who are getting the finest in economy and reliability from their power plants.

Cast Steel Valves: a new 56-page catalog (No. 12—Section C) just issued by The Edward Valve & Mfg. Co., Inc., East Chicago, Ind.

Included are complete design, dimensional and metallurgical descriptions of Edward cast steel stop, check, and stop-check valves.

Also described in the catalog are Edward patented impactor hand-wheels, throttlers and by-passes. In the back section, current pressure-temperature adjusted service ratings, flange facing information and drawings and helpful tips on valve usage have been included.

Banish Old Man Wet, a new bulletin issued by the Primoid Products Corporation, describing its various rubber-base compounds, which are designed to stop leaks or seepage through brick, concrete, stucco or other types of masonry.

Protective and Productive Flood Lighting. For night time production and protection in outdoor areas near manufacturing buildings, and for construction projects, recommended floodlighting practice is described in a new 22-page bulletin announced by Westinghouse Electric and Manufacturing Company.

Divided into six parts, the scope of the bulletin is as follows:

1. Typical applications of protective flood lighting.
2. Application of principles to the points requiring protection.
3. Application of equipment to points requiring protection.
4. Flood lighting for production.
5. Typical industrial plant applications.
6. Lighting units for protective and productive lighting.

Positions of lighting fixtures relative to ground and buildings are shown by drawings for the following applications; shipways, railway yards, freight terminals, storage and handling of materials, and building construction. Application data give flood light types, locations, spacing, aiming, and mounting type.

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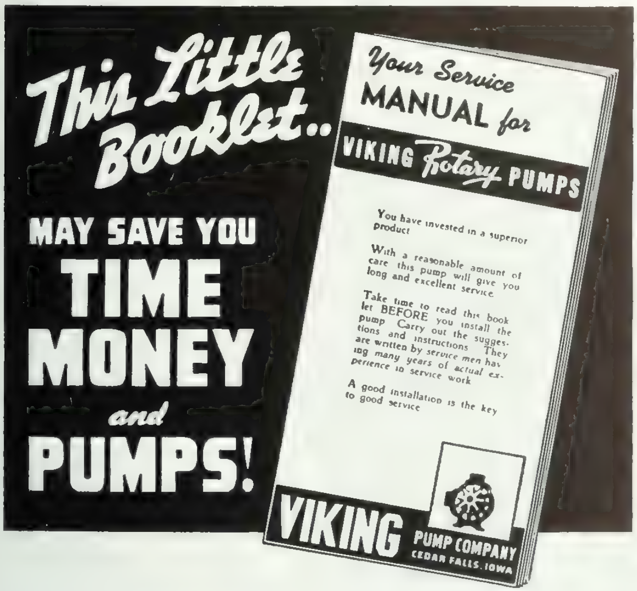

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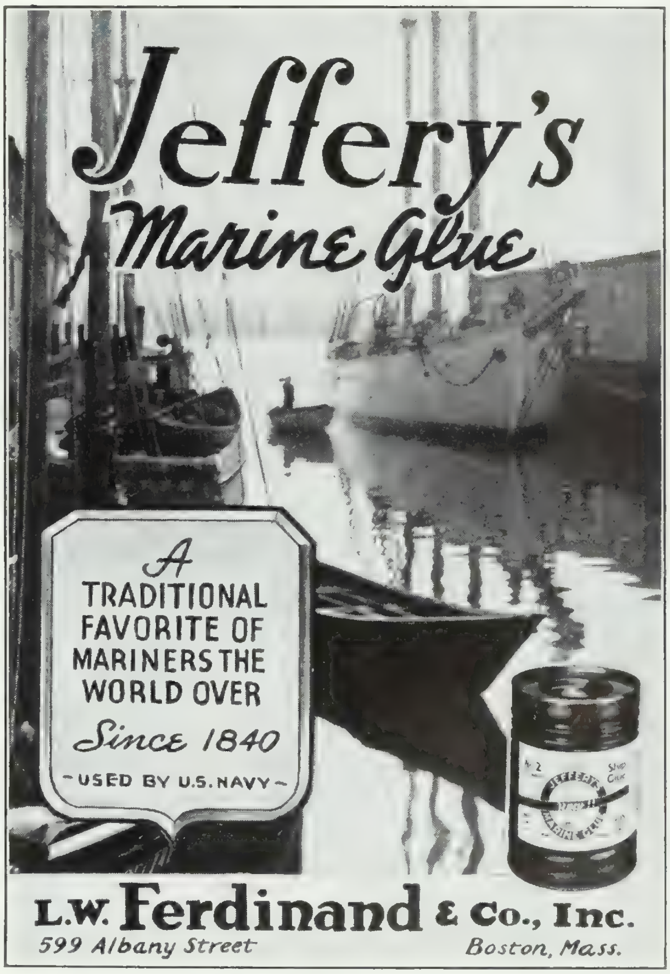

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Every seagoing mariner, actual or potential, who is able to do simple addition and subtractions, can master the art of modern navigation with the help of this book. Here is a working manual of the latest and best methods by which you can chart and steer a safe course to any part of the world. Simply and logically, this book presents essential information the navigator must have to solve two basic problems:

(1) Where he is.

(2) How, under varying conditions, to set a course from his position which will take him to his destination.

Practical Marine Diesel Engineering, by L. R. Ford; 610 pages, 6"x9"; 310 illustrations; bound in green buckram, with gold stampings; published by the Simmons-Boardman Publishing Corporation, New York City. $5 net.

This is the third edition of Mr. Ford's book and the significant change, as compared with former editions, is that this book is now limited to American-made diesels, and largely to those American makes most widely used.

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All Government and voluntary price controls and priorities are brought up to date in the Price and Priority Digest. In addition to giving the status of nearly 200 commodities and commodity groups, prospects for civilian allotments are also reviewed for quick reference on part of the purchasing executive.

The new edition of the Export Control List embraces 32 pages of product listings, with all licensing and destination symbols posted next to each item. It is the fifth revision of what has become recognized as the most authentic export guide available today.

Both supplements have been published in handy tabloid form and may be had at 10 cents each from the N. Y. *Journal of Commerce,* 63 Park Row, New York. A limited supply of OPM and OPA order texts, as published in the columns of the *Journal of Commerce,* is also available at the same price.

What the Citizen Should Know About the Merchant Marine, by Carl D. Lane; 201 pages; illustrated with sketches and diagrams by the author; bound in green cloth with gold stampings; published by W. W. Norton and Co., Inc., New York. Price $2.00 net.

This is a nice piece of bookmaking and is arranged on a very sensible plan to give a general comprehensive idea of the merchant marine to the average citizen.

However, we cannot pass over the fact that it shows much evidence of failure to check figures and facts.

The Federal Labor Laws, by Russell L. Greenman and Leslie L. Saunders; 80 (5" x 8") pages; bound in green cloth with red stampings; published by National Foremen's Institute, Inc. Price $1.50 net.

This manual was especially written for supervisors, gang leaders, department heads, and those in business and industry who have men working under their direction and upon whom the Wagner Act has imposed certain limitations in their dealings with workers, who are affected also by the Wages and Hours Act and the Walsh-Healey Act.

"The Federal Labor Laws" is intended to interpret in simple language to these supervisors, those portions of the law which are of direct interest to them.

Glass: The Miracle Maker, by J. C. Phillips; 440 (5½" x 9") pages; profusely illustrated with tables, diagrams and half tones; bound in gray cloth with red stampings; published by Pitman Publishing Corp., New York. Price $4.50 net.

Here is a fascinating, effectively arranged story by an expert. The author is an industrial research scientist with the Corning Glass Works. The book is technical enough to meet the need of engineers, executives, industrial designers, and students. It is also a stimulating and understandable story for the general reader.

For anyone at all interested in the history, chemistry, physical and chemical properties, manufacture, and application of glass, this book is an indispensable treasury of accurate and interesting information.

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Pacific MARINE REVIEW

Gearing Up for "All Out" Ship Production ~ **FEBRUARY 1942**

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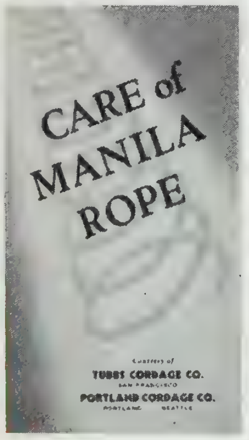

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Pacific MARINE REVIEW

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Official Organ

Pacific American Steamship Association

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Shipowners Association of the Pacific Coast

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Defense Savings Pay-Roll Allotment Plan

How company heads can help their country, their employees, and themselves

voluntary pay-roll allotment plan	
	helps workers provide for the future
	helps build future buying power
	helps defend America today

This is no charity plea. It is a sound business proposition that vitally concerns the present and future welfare of your company, your employees, and yourself.

During the post-war period of readjustment, you may be faced with the unpleasant necessity of turning employees out into a confused and cheerless world. But you, as an employer, can do something *now* to help shape the destinies of your people. Scores of business heads have adopted the Voluntary Pay-roll Allotment Plan as a simple and easy way for every worker in the land to start a *systematic* and *continuous* Defense Bond savings program.

Many benefits . . . present and future. It is more than a sensible step toward reducing the ranks of the post-war needy. It will help spread financial participation in National Defense among all of America's wage earners.

The widespread use of this plan will materially retard inflation. It will "store" part of our pyramiding national income that would otherwise be spent as fast as it's earned, increasing the demand for our diminishing supply of consumer goods.

And don't overlook the immediate benefit . . . money for defense materials, quickly, continuously, *willingly*.

Let's do it the American way! America's talent for working out emergency problems, democratically, is being tested today. As always, we will work it out, without pressure or coercion . . . in that old American way; each businessman strengthening his *own* house; not waiting for his neighbor to do it. That custom has, throughout history, enabled America to get things done *of its own free will*.

In emergencies, America doesn't do things "hit-or-miss." We would get there *eventually* if we just left it to everybody's whim to buy Defense Bonds when they thought of it. But we're a nation of businessmen who understand that the way to get a thing done is to *systematize* the operation. That is why so many employers are getting back of this Voluntary Savings Plan.

Like most efficient systems, it is amazingly simple. All you have to do is offer your employees the convenience of having a fixed sum allotted, from each pay envelope, to the purchase of Defense Bonds. The employer holds these funds in a separate bank account, and delivers a Bond to the employee each time his allotments accumulate to a sufficient amount.

Each employee who chooses to start this savings plan decides for himself the denomination of the Bonds to be purchased and the amount to be allotted from his wages each pay day.

How big does a company have to be? From three employees on up. Size has nothing to do with it. It works equally well in stores, schools, publishing houses, factories, or banks. This whole idea of pay-roll allotment has been evolved by businessmen in cooperation with the Treasury Department. Each organization adopts its own simple, efficient application of the idea in accordance with the needs of its own set-up

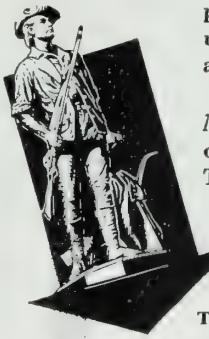
No chore at all. The system is so simple that A. T. & T. uses exactly the same easy card system that is being used by hundreds of companies having fewer than 25 employees! It is simple enough to be handled by a check-mark on a card each pay day.

Plenty of help available. Although this is *your* plan when you put it into effect, the Treasury Department is ready and willing to give you all kinds of help. Local civilian committees in 48 States are set up to have experienced men work with you just as much as you want them to, and no more.

Truly, about all *you* have to do is to indicate your willingness to get your organization started. We will supply most of the necessary material, and no end of help.

The first step is to take a closer look. Sending in the coupon in no way obligates you to install the Plan. It will simply give you a chance to scrutinize the available material and see what other companies are already doing. It will bring you samples of literature explaining the benefits to employees and describing the various denominations of Defense Savings Bonds that can be purchased through the Plan.

Sending the coupon does nothing more than signify that you are anxious to do *something* to help keep your people off relief when defense production sloughs off; *something* to enable *all* wage earners to participate in financing Defense; *something* to provide tomorrow's buying power for your products; *something* to get money *right now* for guns and tanks and planes and ships.



France left it to "hit-or-miss" . . . and *missed*. *Now* is the time for *you* to act! Mail the coupon or write Treasury Department, Section A, 709 Twelfth St. NW., Washington, D. C.

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709 Twelfth St. NW., Washington, D. C.

Please send me the free kit of material being used by companies that have installed the Voluntary Defense Savings Pay-Roll Allotment Plan.

Name ____________________

Position ____________________

Company ____________________

Address ____________________

Pacific Marine Review

Editorial Comment

Pacific Coast Shipbuilding Program

On January 16 the U. S. Maritime Commission allotted to three existing yards on the Pacific Coast a total of 322 Liberty steamers; to one yard yet to be built at Vancouver, Wash., 65 Liberty steamers; and to another yard yet to be built at Richmond, California, 15 C-4 steamers.

Together with the work already in hand, this makes a total of 689 vessels of 2000 gross tons or over now ordered from Pacific Coast yards by the Maritime Commission. This is a tremendous order for any shipbuilding set-up to handle. To get an idea of just how big this business is, we should compare it with some other big achievement in the same line.

Nearly everyone in the know agrees that the American shipbuilding effort in World War I was the greatest in history. Let's see how it compares with our present program.

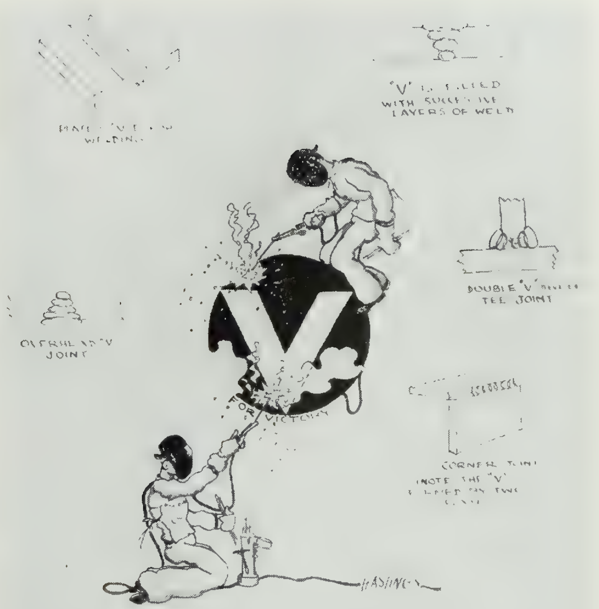
The Pacific Coast at the end of that shipbuilding effort had 19 shipyards building steel seagoing cargo vessels for the U. S. Shipping Board Emergency Fleet Corporation. By January 1, 1922, these yards had delivered 467 steel steamers aggregating 4,135,700 deadweight tons, which would be the equivalent of not more than 3,500,000 gross tons. This was considered a stupendous job for these 19 shipyards, and they were nearly five years doing it. Remember that quite a number of these ships were building before the United States entered the war, and many of them were not finished till late 1921.

Our present program from the Maritime Commission (689 vessels aggregating 4,857,340 gross tons) is scheduled to be completed by the end of 1943.

In other words, nine of our present shipyards will deliver a 47 per cent greater number of ships in 50 per cent less time than 19 shipyards could 21 years ago.

That is the hope and expectation of the shipyards and of the Maritime Commission. Their expectation is founded on established records in these nine yards, and the realization is certain if the Maritime Commission can keep an orderly procession of steel, machinery and equipment in sufficient quantities flowing into these yards.

This tremendous improvement in speed of construction, as evidenced by the records, is due to standardization, to modern shipyard technique, to a more perfected organization and at least partial elimination of redtape delays by the Maritime Commission.



THE WELDERS PART

"V" Welds For "Victory" Ships

Welders throughout the country are expressing their desire for victory of the United States over the Axis powers in terms of welded joints —butt welds, lap welds and particularly V welds in the construction of ships, tanks, guns and other armament vital to the war effort.

One welder, however, thought that this type of expression was not quite enough. So welder Bob Hastings, of Newport News, Virginia, interpreted his feelings in the sketch shown, which illustrates how the various V joints really spell out a "V for Victory" over the enemies of his country.

In a letter to A. F. Davis, vice president of The Lincoln Electric Company, prominent manufacturer of arc welding equipment, Cleveland, Ohio, Hastings said:

"Here's truly a concrete example of V for victory.

"I'm a welder at a nearby shipyard and there's no use telling you all the V joints we weld here.

"Believe me, there's a great satisfaction in 'Veeing' an aircraft carrier or other warships when we know that every joint welded is bringing us just that much closer to slapping the hell out of those d — — n Japs and Germans.

"Yours for more V's for Victory,
Bob Hastings."

Twenty-Five Years of Progress

It is always interesting and sometimes helpful in times of National emergency to indulge in retrospect and try to compare the last emergency with the present. Twenty-five years ago, American relations with Germany were strained almost to the breaking point. The war in Europe had drained the American merchant marine of the cargo vessels that ordinarily took care of our intercoastal and our overseas trade. All of the foreign-flag bottoms ordinarily in American commercial trades were engaged in the more profitable business of carrying munitions.

The Congress had, therefore, created the United States Shipping Board and financed that body to create a fleet of merchant ships for commercial cargo carrying.

On December 22, 1916, President Wilson published the names of his nominations as Commissioners on the Board. These were: William Denman, of San Francisco, for a six-year term; Bernard N. Baker, of Baltimore, for a five-year term; John A. Donald, of New York, for a four-year term; James B. White, of Kansas City, for a two-year term; and Theodore Brent, of New Orleans, for a two-year term.

This Board proposed to build 50 vessels for commercial use. As of January 1, 1917, there were building in the shipyards of the United States 271 vessels, each of 1000 tons gross or over, and aggregating 1,428,268 gross tons. Of these vessels, 90, aggregating 427,774 gross tons, were admittedly for foreign owners. More than half the balance were for builders account and later were changed to accounts of various foreign owners.

This program of steel shipbuilding was crowding the then record annual production for American shipyards and it was growing very fast, particularly on the Pacific Coast, which had 30.39 per cent of the totals given above.

Immediately after the declaration of a state of war between the United States and Germany in April of 1917, the United States Shipping Board was instructed to build a war auxiliary fleet, and one of its first acts was to take over all of the above shipbuilding program then existing in American shipyards.

Subsequent records show that out of the huge Shipping Board program of shipbuilding under the Emergency Fleet Corporation, with very few exceptions, the only steel ships actually in service before the Armistice date were the requisitioned ships—the ships taken over from the building program already existing before our entry into that war.

We are very fortunate today that our Maritime Commission had ironed out most of the political and technical kinks and had its program well under way before our entry into the present war. We now look forward with confidence to the production of vessels of 10,000 tons deadweight capacity every 12 hours of the next 700 days.

That is some goal for American shipbuilders. However, they are now proving that their combined efforts and plants can make that goal if the necessary material, machinery and equipment is kept moving to the yards in sufficient quantity and regularity.

This is Our War All of U.S.

He was a small man as men go. Small in stature but large in heart.

As he sat across from my desk talking in a quiet, unhurried voice, two things happened to me. To my throat there came a lump; to my heart came pride. For here, I knew, was a man the likes of whom trod sacred earth at Lexington, Yorktown, The Alamo, Gettysburg and San Juan Hill, bequeathing to us the heritage that is America. He was just as sincere. Just as rugged. Just as tough.

"I've talked it over with the Missus," the small man is saying, "and we agree that my place is at Pearl Harbor. . . . You see they got Tom at Pearl Harbor last Sunday. He was only twenty and . . . well, I want to do something about it.

"Trouble is," he continued, "they say I'm too old, and hell, Mister, I'm not old. Just in my fifties. But I can't make them understand. The Missus understands though; we went through the last one together. I was in the 222nd Air Service. She was a steno at American headquarters in London. We got married after the Armistice and I brought her home. Tom was our first kid. So you see I got to get in it. But they say I can't. Too old. But I'm not too old to work. So I'm going to stay on here and work. Work like hell and buy defense bonds. . . .

"Old! I'm not braggin', Mister, but man for man and age for age I can take any German, Jap or Wop!"

Tom's father is not alone. There are others in the yard, and innumerably more throughout the Nation, who share a similar sorrow and who like him have a personal and intimate reason for wanting to deliver a telling blow against our enemies.

In our office there is a girl. Her husband is on the firing line in the Far East. She, like her husband, is young. They both love life. They both are brave. She is every inch a soldier, for in her own quiet and determined way she too is doing a capable job, undaunted and unafraid. Like Tom's father she is staying on and working. Working and buying defense bonds.

The war has not yet touched the majority of us in the personal way it has touched the father of Tom and the soldier's wife. Yet it is just as much our war, and unless we give of our service and substance as fervently as they, we are short changing ourselves, our God and our Country.

This is a total war which, on the home front, calls for a total giving of service and substance. Anything less than all-out giving may mean the difference between victory and defeat. If there was, or ever should be, a time for lip service, this is not that time. Tom's father and the gallant girl, who is the soldier's wife, know.

[*The Shipbuilder,* published by Los Angeles Shipbuilding and Dry Dock Corporation.]

Ancient Ceremony Revived for Liberty Ship

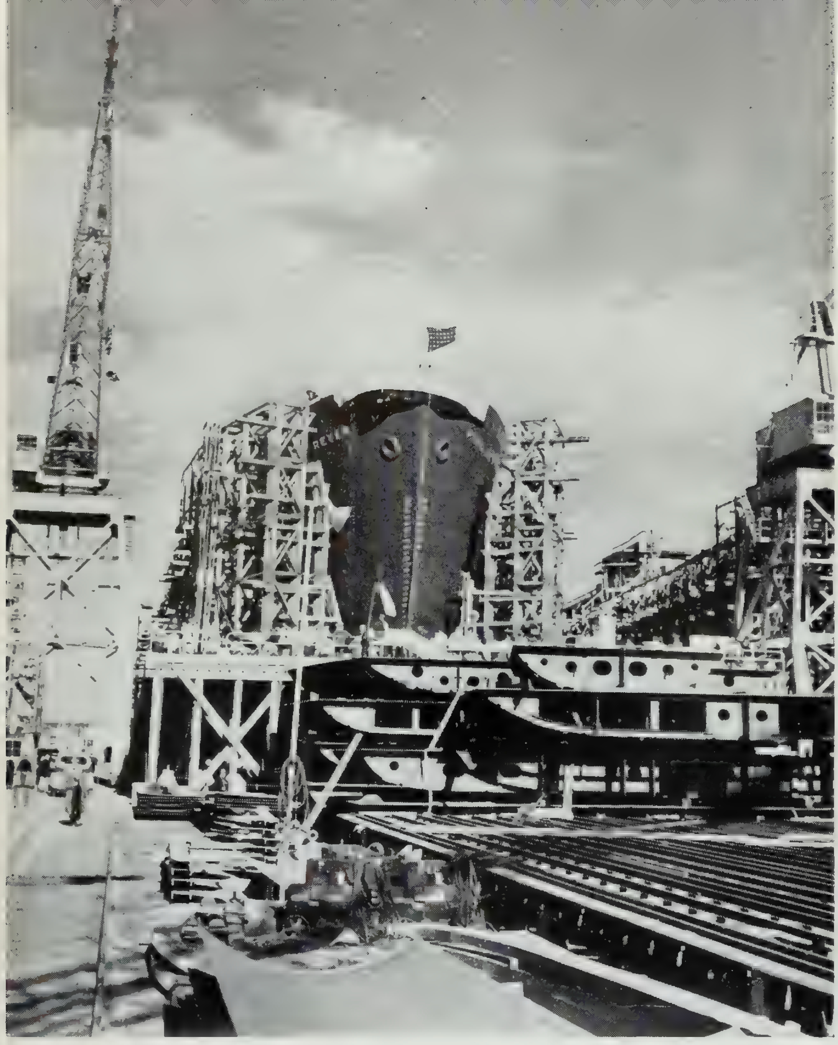
At the yard of the California Shipbuilding Corporation on the occasion of the launching of the seventh Liberty ship was revived the ancient Catholic ceremony of "Blessing the Ship."

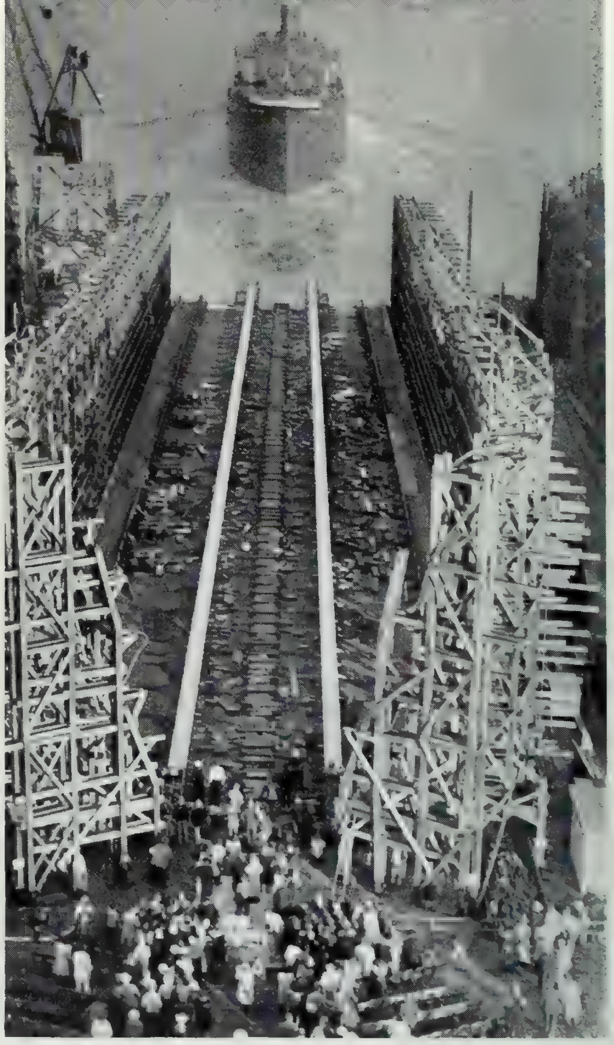
Rev. Raymond J. O'Flaherty of the Catholic Welfare Bureau of Los Angeles conducted the ceremony.

The ancient words of the ritual intoned by the priest invoked the Divine blessing on the hull—". . . and bless with Thy holy right hand this ship and all who will travel on it, even as Thou didst deign to bless the Ark of Noah, sailing in the deluge. . . . Send Thy Holy Angel from Heaven to set this ship free from its moorings and ever to keep from all harm this ship and all who shall travel on it." Holy water was then sprinkled on the bow.

Mrs. Margaret McCone, eighty-year-old mother of John McCone, executive vice president of the California Shipbuilding Corporation, using a bottle of California champagne, christened the ship S. S. Robert Morris, after the famous banker who did so much to help finance the American Revolutionary War.

As in all recent launching ceremonies there was a conspicuous absence of political and society figures.





All Out . . . To Build Ships!

By

REAR ADMIRAL
HOWARD L. VICKERY
Commissioner, U. S. M. C.

Acting in response to President Roosevelt's recent directive that 8,000,000 deadweight tons of shipping be constructed in 1942, and 10,000,000 tons in 1943 to prosecute the war successfully, the Maritime Commission has expended its program by negotiating for the construction of 632 additional merchant ships at an estimated cost of approximately $958,000,000.

In speeding up the program which already provided for the construction of 1400 seagoing vessels during this year and next, the Maritime Commission will make greater use of existing facilities and personnel. Old yards will be expanded, while two yards now doing work for the British will be utilized for American construction.

Negotiations are continuing with other existing yards for further production. Announcement will be made from time to time as these negotiations are completed.

ITEMS IN SHIPBUILDING

Eight hundred and fifty vessels in 1942—1000 vessels in 1943. Rear Admiral Vickery states that this goal of the Maritime Commission contemplates the manufacture, inspection, transportation and delivery of some 65,000 purchase items. These items affect the industry of the nation. Items for these ships will come from practically every state in the Union.

There are approximately 65,000 purchase items which are made by manufacturers scattered throughout the entire country under our "Spread the Work" plan. The shipyard job, therefore, is assembling these items into completed ships. The *problem* is to get the materials there from the enormous number of sub-contractors, and have all the items available to the ship assembler *when* they are needed.

We know that it is physically possible to meet the President's mandate for 8 million deadweight tons of ships in 1942 *provided* materials are on the sites at the times when required and that labor is willing to put its shoulder to the wheel. The original construction program was based on a five-day week of 8 hours per day. The expanded shipbuilding program of 8,000,000 deadweight tons is possible by working "around the clock" and by labor's cooperation.

All of the vessels will be completed by the end of 1943. This will mean American shipyards will turn out over 1900 vessels in the next two years, the greatest shipbuilding effort in history. The ships newly contracted for represent over 5,000,000 deadweight tons and will give the United States a total of 18,500,000 tons of new maritime construction.

The Commission's original plan to construct 574 ships of 6,000,000 tons this year is being enlarged to provide for the completion of about 850 vessels of approximately 8,000,000 tons. In 1943, this pace will be speeded up to the rate of 1000 vessels, totaling about 10,000,000 tons.

The reason the Maritime Commission is able to carry out the President's expanded shipbuilding program is largely because the design of Liberty ships has been standardized, and the building of these ships becomes a manufacturing problem on the lines of mass production.

The initial planning and procurement work for these ships was done in a very thorough manner by Gibbs & Cox, naval architects, who executed the detailed working plans and the initial purchasing for the first group of 300 ships built by the Maritime Commission.

Last summer the Commission took over the procurement of machinery and equipment for additional ships and organized a Procurement Section of its own which has been purchasing in advance for these ships, and now has much of the required equipment already under contract and manufacture.

It will require about one-third more people than are presently employed in

Setting the Pace

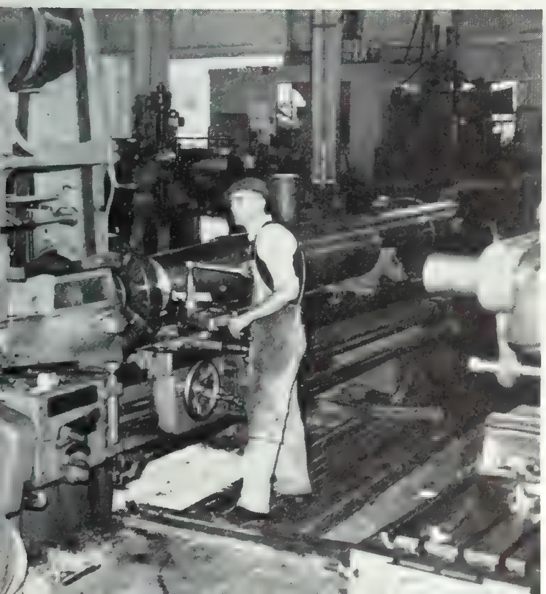
HENRY J. KAISER

His shipyard organizations are making records turning out the ships

U. S. M. C. Contracts for January

Houston Shipbuilding Corporation, Houston, Texas	32	EC-2 type
California Shipbuilding Corporation, Wilmington, Calif.	109	EC-2 type
Todd-California Shipbuilding Corp., Richmond, Calif.	125	EC-2 type
Permanente Shipbuilding Corp., Richmond, Calif.	15	C-4 type
South Portland Shipbuilding Corp., South Portland, Me.	33	EC-2 type
Todd-Bath Shipbuilding Corp., Portland, Me.	27	EC-2 type
Alabama Dry Dock and Shipbuilding Co., Mobile, Ala.	28	EC-2 type
Oregon Shipbuilding Corp., Portland, Ore.	88	EC-2 type
Kaiser Co., Inc., Vancouver, Wash.	65	EC-2 type
Bethlehem-Fairfield, Baltimore, Md.	110	EC-2 type
Delta Shipbuilding Corp.	28	EC-2 type
North Carolina Shipbuilding Corp., Wilmington, N. C.	53	EC-2 type

In the Shops . . . . The Men are Breaking Records



shipyards—which I should estimate would be around 850,000 at the end of the year.

The Houston, California Shipbuilding, Richmond Shipbuilding, South Portland (Maine), and Alabama Dry Dock companies are at present engaged in building ships for the Maritime Commission. Todd-Bath Iron Shipbuilding Corporation (South Portland, Maine) and Todd-California Shipbuilding Corporation (Richmond, California) are constructing vessels for the British. As soon as they complete these contracts, they will be available for this additional construction.

The Oregon Shipbuilding Corporation of Portland, will erect a new yard at Vancouver, Washington, and because of its close proximity to the parent yard will be able to make use of management, personnel, machine tools and other equipment. A similar use of existing facilities will be employed at the Richmond, California, yard of the Permanente Shipbuilding Corporation, a subsidiary of the Todd Shipbuilding Corporation, which also has a yard at Richmond.

CRANES, TRUCKS, TRAILERS AND RAILROAD CARS are very important items in shipyard equipment. Above: Loading shapes on a special Fruehauf trailer. Below: Crane swings a section of keel into place on the ways. Both views in Pacific Coast yards

Immediately following the President's order for further expansion of the shipbuilding program, the Maritime Commission made a survey of existing yards, those under construction and those being expanded. A few of the better unused sites were examined.

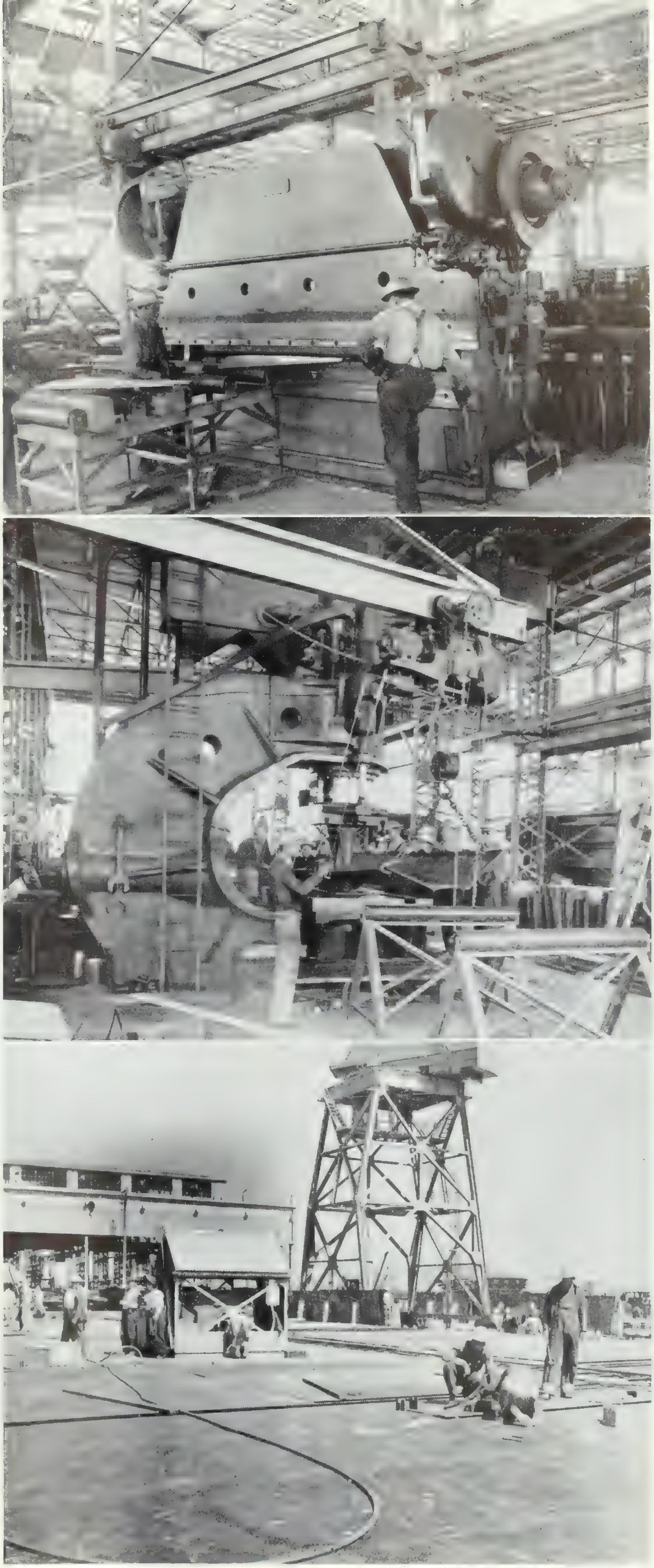
Actual experience in the construction of new yards positively and definitely indicated that few, if any, deliveries of ships in 1942 could be expected from any yards not already in existence or practically completed. It therefore became necessary to determine what could be done with existing yards with such expansions as are necessary. If any new facilities were required, it was determined to be imperative that the utilization of some of the existing facilities, ranging through the categories of management, shipbuilding brains, machine tools, buildings, mold lofts, cranes, etc., be utilized to the maximum extent in order to accomplish the results desired.

The Commission's experience over the past year in starting new yards has proven the impracticability, if not the impossibility, of securing proper machine tool equipment, cranes, etc., in sufficient time to permit the production of ships in new yards in less than a year to fifteen months' time, unless some of the essentials are already available in existing plants and under the control of the new or expanded organization. For example, we are still short of some crane equipment in some of the new yards started nearly a year ago. This has delayed present construction schedules.

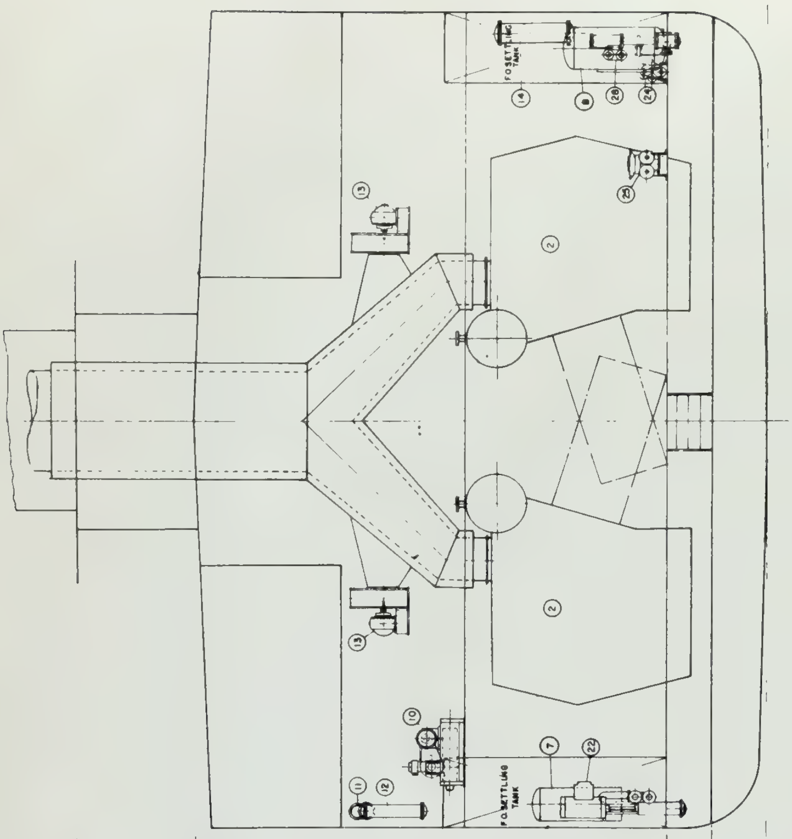
After reaching these determinations, contacts were made with the various builders in order to determine the limits of their capacity and the schedules that they could meet.

As soon as the order from the President was received, OPM was contacted with regard to the necessary qualities and quantities of steel. Following this procedure, other contacts were made with regard to propulsive machinery, auxiliaries, etc.

Consultations were held with representatives of the Navy Department, and as soon as the initial program was in any way formulated, the matter was taken up with OPM so that the necessary clearances would be obtained as soon as the projects were presented.



TYPICAL PLATE SHOP and welding park shots in a Pacific Coast shipyard. Top, the plate bending brake; center, the hydraulic joggling press; and bottom, an electric arc welding machine on the welding park



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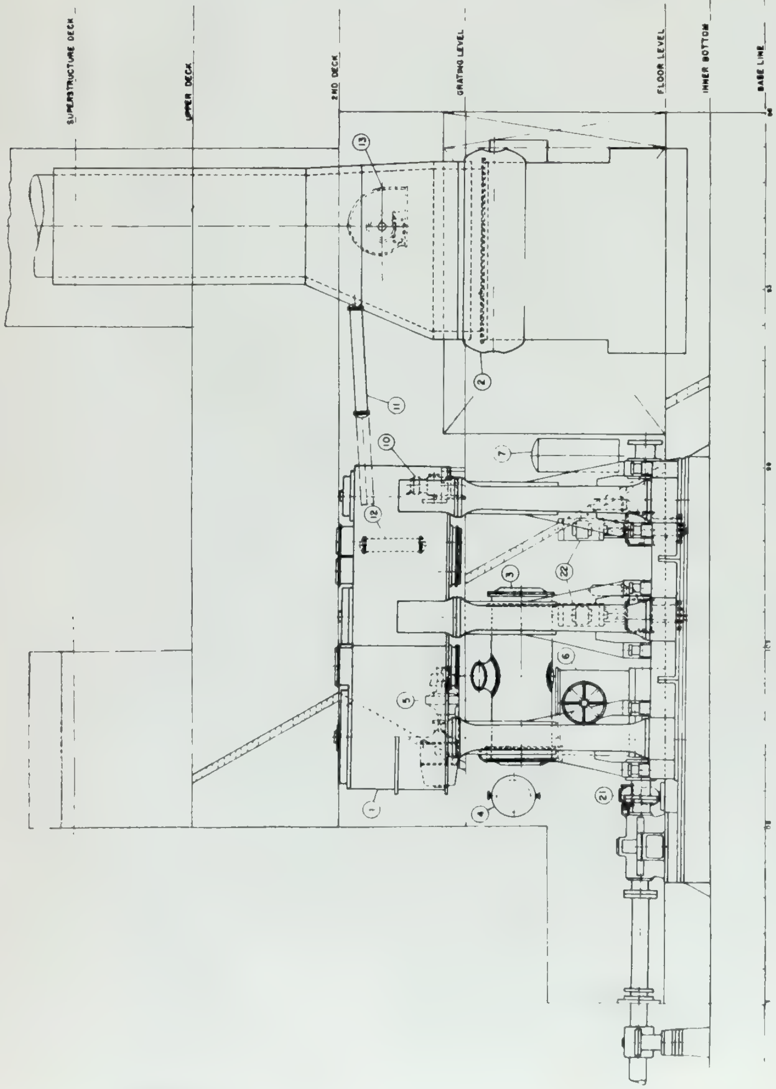
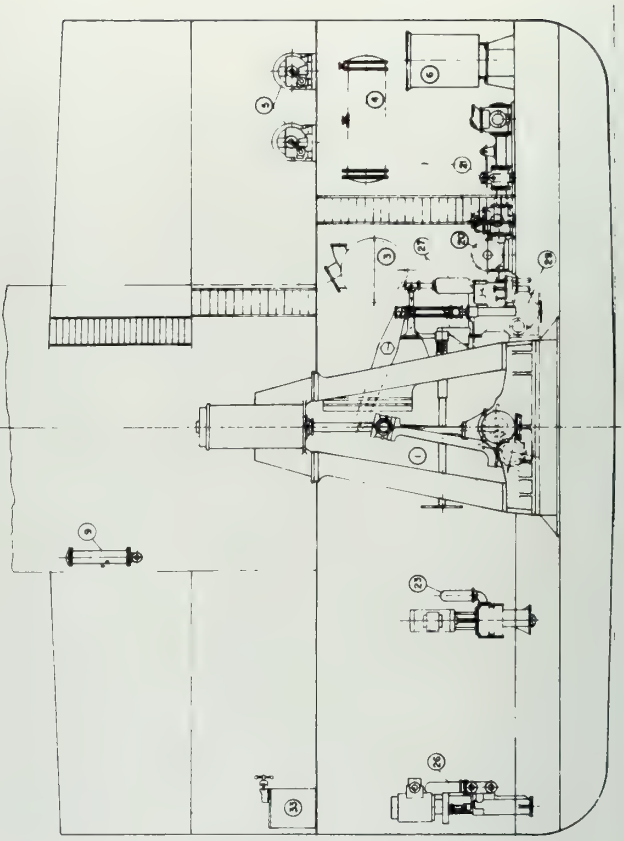


ELEVATION AT CENTERLINE LOOKING TO PORT



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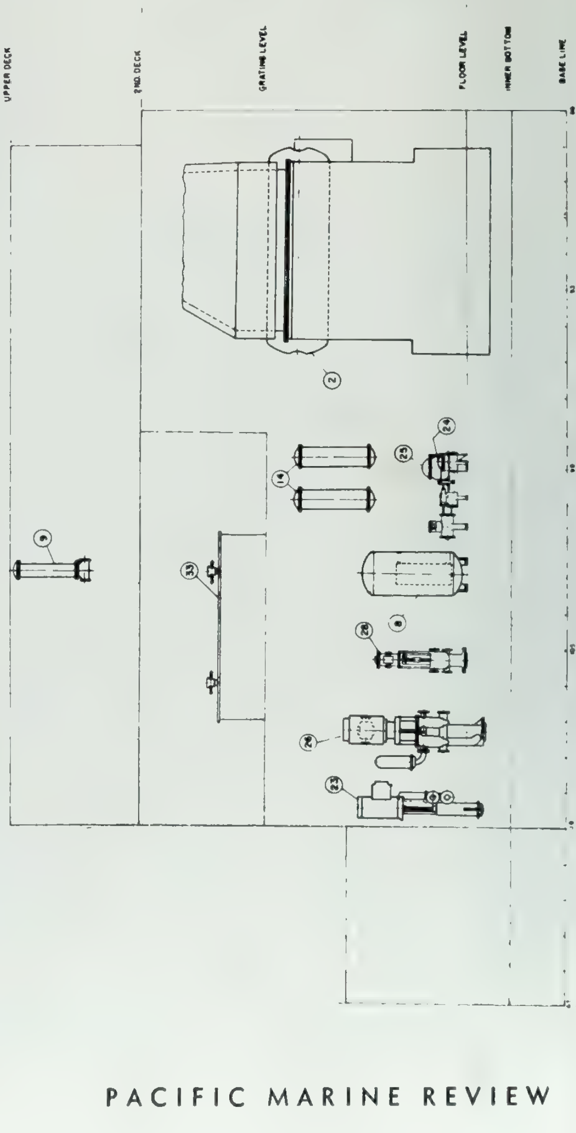
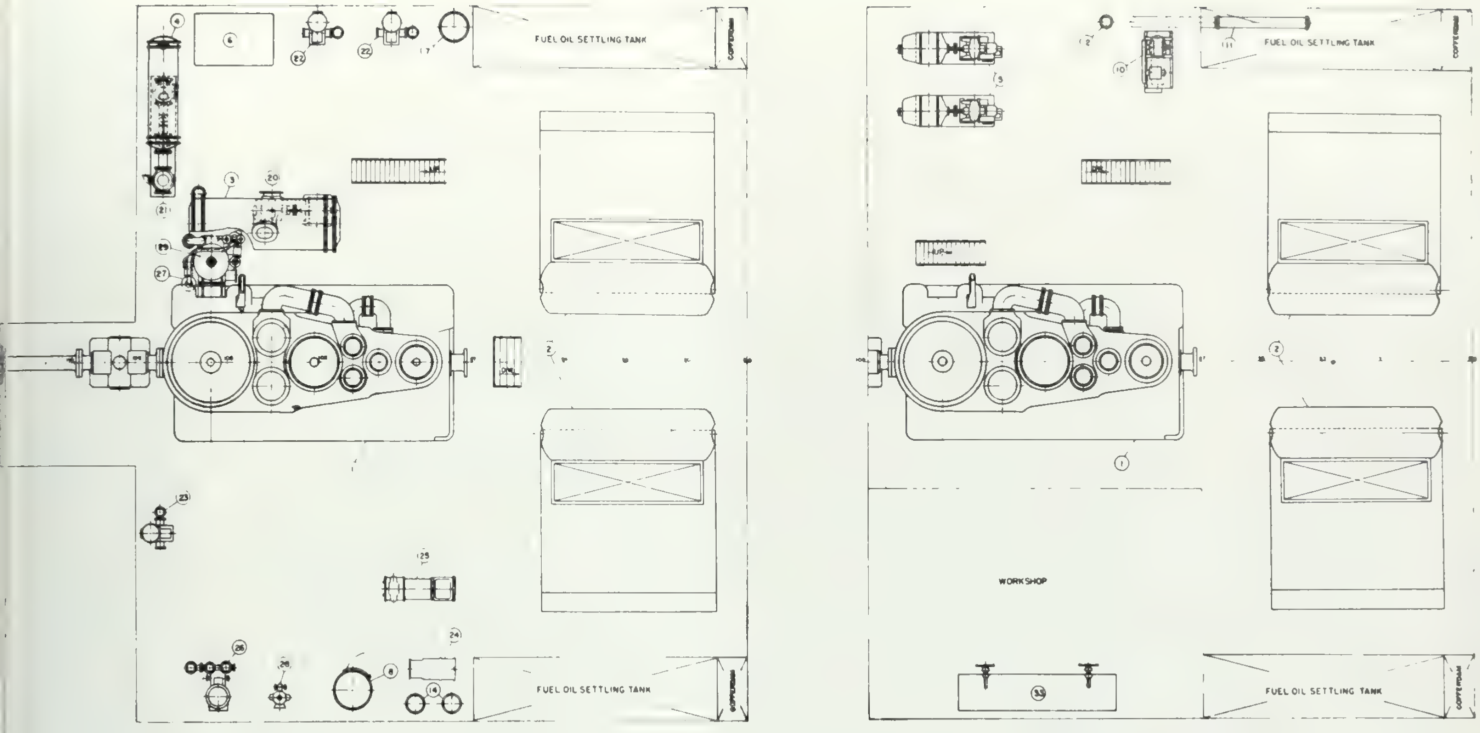


ELEVATION STARBOARD LOOKING TO CENTERLINE



PLAN VIEW FLOOR LEVEL

PLAN VIEW GRATING LEVEL

ON FACING PAGE are several elevations of the engine room of an EC-2. Note that the two water tube boilers are in the same compartments as the engine, and the short, simple main between boilers and engine. The arrangement is very simple throughout

In developing this expanded program, the Maritime Commission determined to incorporate two new designs which have been under preparation for many months in order to meet the all-out effort of the United States. Investigations and conferences had been taking place for some time with the proper authorities relative to these matters.

As standard forms of contracts were already available, the principal negotiations involved productive capacity, scheduling, etc., rather than the usual complicated contract procedure, not heretofore standardized.

Admiral Land, commenting on this program said, "Paraphrasing the President's speech of the 6th, I rather hope that this part of our program will soon become common knowledge in Germany and Japan . . . facts are bullets."

The EC-2 design

The EC-2, or so-called Liberty ship, now forms the majority of the U. S. M. C. shipbuilding program. We show on this and the facing page the arrangement of the propulsion machinery compartment of these vessls. It will be noted that both boilers and the engine are in the same compartment with a very short main steampipe connection.

KEY TO MACHINERY ARRANGEMENT

Item No.	Name of Part
1.	Main Engine
2.	Boilers
3.	Main Condenser
4.	Auxiliary Condenser
5.	Turbo Generators
6.	Feed and Filter Tank
7.	Feed Water Heater
8.	Evaporator
9.	Distiller
10.	Refrigerating Compressor
11.	Refrigerating Condenser
12.	Refrigerating Receiver
13.	Forced Draft Blowers
14.	F. O. Heaters
20.	Main Circulating Pump
21.	Auxiliary Air and Circulating Pump
22.	Feed Pumps
23.	General Service Pump
24.	Fuel Oil Service Pump
25.	Fuel Oil Transfer
26.	Fire Pump
27.	Bilge and Ballast Attached
28.	Salt Water Service
29.	Wet Air Pump Attached
33.	Work Bench

The physical dimensions of the hull are in between the C-1 and the C-2. Length overall is 441 feet 6 inches, length on load waterline 428 feet, and beam is 57 feet.

The hull is divided by seven watertight bulkheads into eight compartments. These from the bow are: forepeak; holds Nos. 1, 2, 3; machinery space; holds Nos. 4 and 5; and afterpeak.

The five hatches are served by ten booms and eleven steam winches. A simple steam windlass takes care of the anchor.

The hulls when down to their line have a graceful jaunty appearance due to their raked bows, modified cruiser sterns, and good sheer fore and aft.

There are two decks, the second deck being without sheer forward but following the sheer line of the weather deck aft. Officers and crew are accommodated in very comfortable quarters in the superstructure amidships.

The propulsion machinery comprises a triple-expansion steam engine as described in the January issue of Pacific Marine Review. This engine is supplied with steam at 220 psi and 50° F. superheat by two oil-burning water tube boilers.

These plants were chosen because of the ability of large numbers of manufacturing plants to undertake production of reciprocating steam engine parts—plants that were not already full of National Defense orders.

Those Liberty ships which have already been finished are demonstrating their usefulness in convoy service on both the Pacific and Atlantic oceans.

CAPTAIN A. B. COURT, U. S. N., RET.

Executive Vice-President of the Los Angeles Shipbuilding and Drydock Corporation

Reorganization of . . .

The LOS ANGELES SHIPBUILDING AND DRYDOCK CORPORATION

Pacific Coast shipbuilding industry gained a valuable top hand last July with the arrival from the East Coast of Captain A. B. Court, U. S. N., retired, who joined the executive staff of the Los Angeles Shipbuilding and Drydock Corporation as executive vice president in charge of operations.

A graduate of the United States Naval Academy and the holder of an M.S. degree from the Massachusetts Institute of Technology, Capt. Court brings to his new job a wealth of experience in every phase of naval construction and repair work, which eminently fits him for his new berth in the San Pedro plant. From 1910 to 1941 he held the following naval assignments:

Norfolk Navy Yard; Philadelphia Navy Yard; Superintending Constructor, New York; Planning Officer, Navy Yard, New York; Manager United States Naval Station, Cavite and Olongapo, P. I.; Bureau of Construction and Repair, Navy Department; Office Chief of Naval Operations; Fleet Constructor; Office of Naval Intelligence; Special Technical Assistant to Chief Naval Operations; Officer-in-Charge Central Drafting Office, New York; Superintending Constructor, New York, supervising plans for Federal Shipbuilding Corporation, Bethlehem Steel Corporation (shipbuilding division), and Bath Iron Works; and inspecting work of construction at Staten Island, New York, and Kearny, New Jersey; Third Naval District, New York, in charge of conversion work.

Upon taking over his new duties at Los Angeles Shipbuilding and Drydock Corporation, Mr. Court found two distinct but inter-related lines of work, i.e., ship construction and ship repair. A clear demarkation had to be worked out for the two lines of endeavor, and it became obvious that a much more elaborate system of controls had to be established than had been necessary when the corporation was doing only one line of work, viz., ship repair, and not a very great volume of that. He therefore grouped activities, current and prospective, in the corporation's San Pedro plant into three main divisions as follows:

Accounting Division, which has all records of cost and expenditure; Division of Finance and Records which has all files, legal and insurance matters, and all monies; and the Works Division in which all of the production work in the yard is done. Each of the Divisions were provided with departments (fourteen in all) which are the working organizations. The Accounting Division has four departments in all, including General Accounting, Plant Accounting or Operations Accounting, and Tax Accounting. The Division of Finance and Records has four departments—Fiscal, Assistant Secretary's, Secretarial (or Confidential), and Office. The Works Division has six departments—Personnel, Technical, Plant, Supply, Production, and Repair.

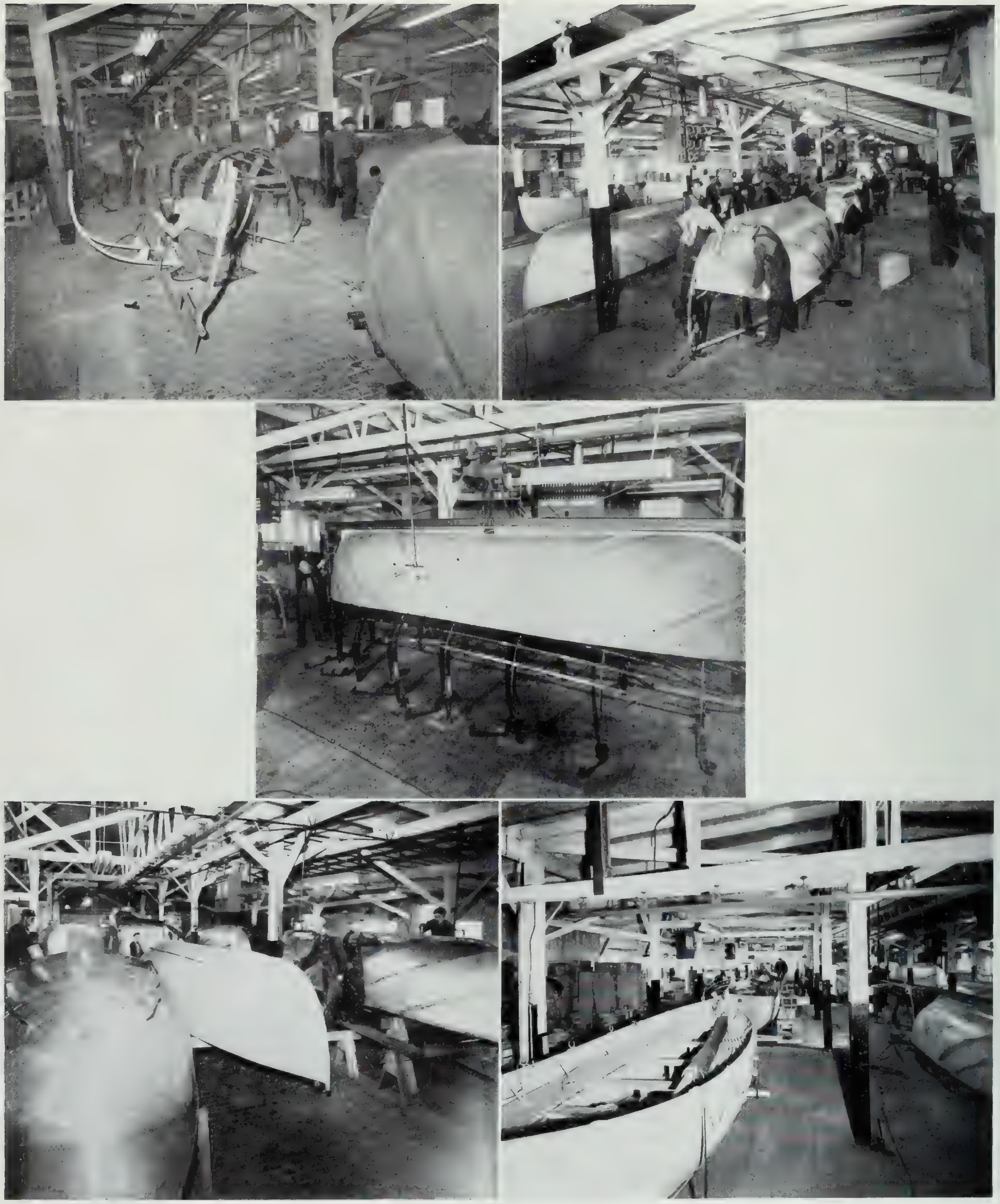
Each department is headed by an official of the grade of manager, although they are not all called by the title of manager. For example, the head of the Plant Department is called plant engineer; the head of the Technical Department is called the chief engineer; the head of the Fiscal Department is assistant treasurer; and the heads of departments in the Accounting Division are called assistant comptrollers, general accountant, plant accountant, and tax accountant.

Each department is divided into sections, the number of sections depending on the separate activities within the department, and each section is headed by a section chief. Furthermore, each department has its own office section, headed by an office supervisor; and each department has a section which plans and guides the activities of the department. The office supervisors all take functional doctrine from the chief clerk, Division of Finance and Records; and the planning or guiding sections all take their functional doctrine from the planning assistant to the executive vice president.

By careful study of the Fair Labor Standard, the Walsh-Healy Act, Wagner Act, the various State statutes on labor relations, the Civil Service manuals and the union contracts, standardization throughout the yard has been achieved in regards to grade and classification of employees, as well as their duties and pay rates. The grades and pay rates of supervisors of all kinds have also been standardized, and the duties, responsibilities and authorities of every person in the yard have been visualized, analyzed and reduced to definite prescription.

The purpose and sole object of all this has been to help the man with his tools, and it has been recognized throughout the whole organization that the only reason for the presence of any person in the yard is to assist the man with his tools to do his work properly, quickly and intelligently. The result has been apparent in two directions. One: the rapidity of the installation of steel on the hulls of ships has tripled in tons since December 1. Two: the progress in machinery for ships is ahead of schedule. The corporation confidentially expects to be able to finish all its ships by contract time, perhaps, in some instances, ahead of contract time.

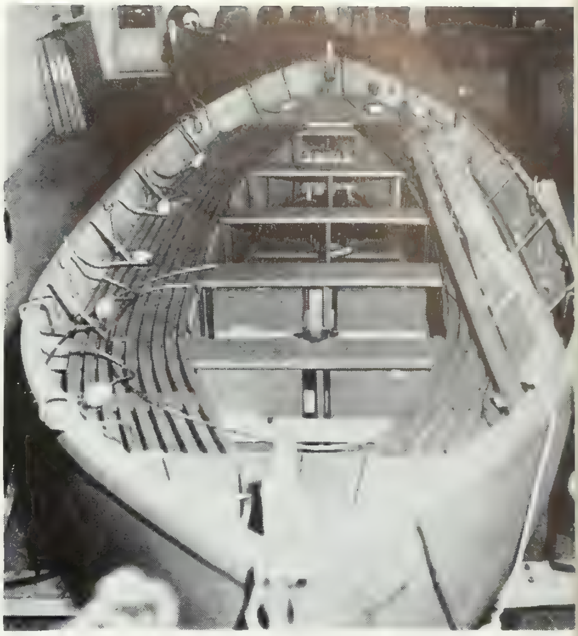
The character of construction at the yard is not that of repetitive ship manufacture. The vessels being constructed are very special types of naval auxiliary craft having much more complicated hull construction and a much larger quantity and variety of machinery and equipment than any comparable commercial types.



STEEL LIFEBOATS IN A STOVE FACTORY

Pictures show how the hulls of boats progress along the production line at the Kokomo, Indiana, plant of the Glove stove division of the Globe-American Corporation

"*Liberty*" LIFEBOATS IN STREAMLINED PRODUCTION



From the center of the Hoosier state—from a stove factory in the thriving industrial city of Kokomo, Indiana—is coming the stream of lifeboats for the U. S. Maritime Commission all-out emergency program of the EC-2 Liberty ships.

The Globe Stove and Range Division of the Globe-American Corporation has been making good reliable stoves for over fifty years. Faced with the need of an A-1 priority rating to keep their men employed, they suddenly decided to look into the lifeboat business. They hired a good naval architect to design a steel lifeboat according to rules of the Bureau of Marine Inspection and Navigation, adapted this design to their streamline production methods.

Then they took the design to the U. S. Maritime Commission and so impressed that body that they were given a contract to build 1248 boats, 312 for power propulsion, and 936 for rowing only.

Seven hundred and forty-four are being built in Kokomo, 200 in New Orleans, and 304 in New York. The Globe-American Corporation holds the prime contract.

Each boat has a capacity for 31 persons and there are four boats to each ship, one of the four being a power boat with a built-in motor.

The construction is entirely of steel, partly riveted and partly welded. The only exceptions are the wood floor boards, seats, masts, oars, and rudder.

In fabrication and assembly, these boats are moved along a power conveyor system and arrive at the shipping platform completely finished, inspected, and ready for shipment. As shown in the illustration, the boats are shipped four (three for rowing propulsion, and one power boat) in a car. When this car arrives at any shipyard, all the shipbuilder has to do is hoist these boats aboard, and secure them to their davit falls and in their cradles.

This successful adventure of an inland stove manufacturer into the merchant marine field is a very interesting example of the adaptability of American industry under the pressure of national emergency.

Before leaving the plant, each boat is completely equipped with everything needed in case of emergency at sea, even including food, water, first-aid equipment and signaling apparatus.

The Kokomo plant is geared to produce one complete lifeboat every two hours, or four to an eight-hour shift. By simply working three shifts, the capacity will be twelve boats a day, or enough for three Liberty steamers per day. If necessary, the firm can easily expand in available room to increase their capacity by 150 per cent, or, in other words, they can turn out enough boats for nine Liberty steamers every 24 hours.

TWO CARLOADS OF LIFEBOATS, four boats to a car, ready to leave Kokomo, Indiana, for Pacific Coast shipyards

News FROM THE PACIFIC NORTHWEST

by Daniel L. Pratt

Geodetic Survey Pathfinder Launched

Replacing the old Pathfinder of the same service, the new U. S. Coast & Geodetic Survey ship Pathfinder was launched at the yards of the Lake Washington Shipbuilding Co. at Seattle on January 11 in the presence of a restricted but considerable throng of guests. The vessel was christened by Miss Eleanor Boettiger, grand-daughter of the President of the United States. Shortly before the launching, Capt. J. H. Peters, inspector of construction for the Coast & Geodetic Survey, received a telegram from Rear Admiral Leo Otis Colbert, head of the Survey in Washington, congratulating the local officers as well as the entire staff and workmen of the Lake Washington yards on the excellent work and progress of construction. Capt. Peters will be placed in command of the new 330-foot steel single-screw ship when she goes into commission about July. Lieut. Comdr. Charles A. Shaw, who commanded the Survey ship Research in the Philippines, will be executive officer, and William E. Greer will be chief engineer. Among those who witnessed the ceremony were Commander F. C. Hingburg, chief of staff of the Coast Guard; Capt. Geo. Madison of the Survey; Capt. S. H. Hardy (retired) and Commander Richard V. Derrickson, also retired. The vessel will cost $1,500,000.

Tug Construction On Puget Sound

The Foss Co., well-known firm of Puget Sound towboat operators, is building a 150-foot towboat at its plant at Seattle, and two smaller tugs at its Tacoma plant. The 150-footer which is being built for the Navy will have 2000-hp diesel motors. The two smaller boats are for the company itself and each will be powered with 500-hp motors.

The Pacific Towboat Co. at Tacoma is also constructing a 300-hp tug for itself.

A. W. Lewis, an Olympic welding contractor, has arranged to build a $35,000 all-welded steel tugboat for service at a Pacific naval base. It will be the first boat built in Olympia for war service. This contract was obtained through H. C. Hanson, Seattle naval architect, representing a naval air base contracting firm in Alameda. It is understood that Lewis, if successful, will have an opportunity to construct more craft of this nature. The vessel will be 52 feet long, with 14-foot 9-inch beam. She will be powered with twin diesel motors developing about 320 hp. Construction will take three months.

Special Export Licenses

Since December 23, all export shipments of Douglas fir and many other products have had to have individual licenses on each shipment. The order, which was issued by the Economic Defense Board of the Office of Export Control, is of particular importance to the lumbermen of the Pacific Northwest. Classes of Douglas fir include logs, hewn timber, sawed timber, boards, planks, scantlings and lumber rough and dressed. Operators in Alaska and the Northwest fisheries are also affected. Animal, fish, and marine mammal oils, fats and greases must have special licenses if exported.Thou-

SHIPYARD OF THE WINSLOW SHIPBUILDING CO., BAINBRIDGE ISLAND, PUGET SOUND sands of gallons of whale oil and fish oil are produced in Alaska and also in Oregon and Washington.

Plan for Removing Ripple Rock

One old navigation mark with which Alaska and coastwise mariners have long been familiar, but which they wouldn't miss, is Ripple Rock in Seymour Narrows, where so many vessels have been wrecked in the treacherous tides. As mentioned last month, it is the Canadian Government's intention, to aid in defense traffic up and down the inland passage by removing this rock but the problem is a tough one. The Dominion Department of Public Works failed to receive any bids on December 6 from contractors, because of risk in losing lives and equipment. Later a practical B. C. mining engineer proposed sinking a shaft on the nearest shore to a depth sufficient to run cross-shafts under the rock and then blow it off its pedestal or break it up in pieces which could be dislodged.

Salvage Ships Ordered

The Bellingham Marine Railway, currently building four mine sweepers for the Navy, received, according to an announcement from Washington on January 5, additional orders to build two 83-foot salvage ships. Company officials say the yard will be expanded immediately as other orders are expected for this pioneer concern.

Buoy Lights Blackout System

A revision of plans for blacking out navigation lights was issued before the first of the year. Faced with the responsibility of safeguarding movements of vessels which must operate during blackouts, Coast Guard officials have outlined rules which give more leaway. They have also arranged to make visible to mariners, but difficult to see from the sky, seacoast buoys which are inaccessible under unfavorable weather and sea conditions; and buoys and unattended lights in harbor entrances. Those buoys and lights which must be kept visible to a certain extent will form a pattern which will be of no value to the aerial observers.

New Oregon Boat Yard

Orders for six wooden vessels have been placed with the Marine Construction & Drydock Co. at Toledo, Ore., on Yaquina Bay. These vessels range from 38 to 75 feet in length and construction has been started on a new set of ways to accommodate boats ranging up to 100 feet. Under the yard's new set-up, **L. L. Simpson,** Corvallis boat-builder who owned the Northwest Boat Shop in Seattle for 17 years, will join **R. D. Shermer,** operator of a small shipbuilding and repair shop at Yaquina Bay for the past several years.

ELEANOR BOETTIGER, granddaughter of President Roosevelt, ready to christen U. S. C. G. survey ship Pathfinder. Ship shown below just after launching

Steering Engines For Liberty Ships

A new order for the manufacture of $1,500,000 worth of steam steering gears for installation in the 10,000-ton ships which the Maritime Commission is building all over the country has been placed with the Webster-Brinkley Co. of Seattle. The announcement came from Geo. Gunn, Jr., and Thomas Bannon, who took the company over just a year ago.

This plant is already operating on a 20-hour schedule, turning out the 252 steam steering engines originally contracted for, as well as other defense material. "We'll have to expand the plant materially," Gunn said, "and we'll be in need of every good machinist we can get." When the plant was purchased a year ago, back-log of orders was about $10,000. Now it is nearer $6,000,000.

Navy to Protect Alaska Fisheries

The Navy will protect salmon fishermen in Alaskan waters next year with planes and ships against any possible enemy attack, it is announced. Limited forces already available for patrol and scouting duties are expected to be materially reinforced within three months, as the fishing activities increase. The Navy is said to be fully aware of the need of protecting the Alaska fisheries as an important source of food value during war time.

Portland Launches Fighting Craft

PC-570, the first fighting ship to hit the waters at Portland since the Spanish-American war, was successfully

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News FROM THE PACIFIC SOUTHWEST

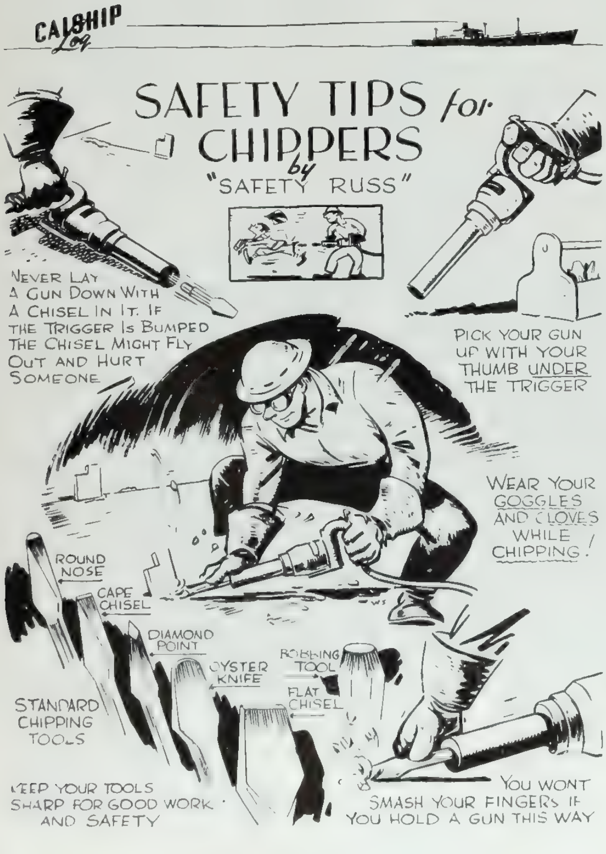
by K. M. Walker

Huge New Shipbuilding Order

The California Shipbuilding Corporation has six of its Liberty ships in the water, with the first (S. S. John C. Fremont) nearly ready for delivery and up to January 16, was looking forward eagerly to the completion of 49 others, a big contract for any shipyard. On the 16th, they drew a long, deep breath, took a hitch to their Levi Strauss pants, and began looking forward to completing 158 exact duplicates of these first six ships.

One hundred and nine additional EC-2s was the share of the big Los Angeles Harbor yard in the awards made by the Maritime Commission on that date. These awards totaled 632 merchant ships to be built at an estimated cost of $1,178,000,000. Of this total, 402 vessels were allocated to Pacific Coast yards.

THIS SAFETY CARTOON is reproduced from Calship Log, house organ of California Shipbuilding Corp.


CALSHIP Log
SAFETY TIPS for CHIPPERS
by "SAFETY RUSS"
NEVER LAY A GUN DOWN WITH A CHISEL IN IT. IF THE TRIGGER IS BUMPED THE CHISEL MIGHT FLY OUT AND HURT SOMEONE
PICK YOUR GUN UP WITH YOUR THUMB UNDER THE TRIGGER
WEAR YOUR GOGGLES AND GLOVES WHILE CHIPPING!
ROUND NOSE
CAPE CHISEL
DIAMOND POINT
OYSTER KNIFE
ROBBING TOOL
FLAT CHISEL
STANDARD CHIPPING TOOLS
KEEP YOUR TOOLS SHARP FOR GOOD WORK AND SAFETY
YOU WONT SMASH YOUR FINGERS IF YOU HOLD A GUN THIS WAY

For this enlarged program in the yard of "Calship" certain facilities will be expanded, but not more building ways will be added. The seven-day week and 24-hour day, with increased personnel, will do the trick. These vessels are all slated for delivery before the end of 1943. This would seem to call for a launching on an average every four or five days or a schedule for each way of thirty-five days from keel laying to launching.

This can be done with coordination of flow of materials and equipment. The shipyard is all set for the job and will perform if given the steel and the other items in an orderly, unbroken flow of deliveries.

War and the Fishing Fleets

The advent of war in the Pacific has temporarily paralyzed the operation of the Southern California fishing fleets, yet the Government has the entire output of the sardine and mackerel fleets, which includes tuna, under contract. Realizing that, to deliver fish and meet the contracts, the fleets must operate, some of the restrictions imposed by the Navy have been lifted but another serious hurdle is the matter of war risk insurance.

A dozen or more of the long-range tuna clippers were taken over by the Government on a charter basis, while operating in the vicinity of the Galapagos Islands, and the crews sent home. It is said these boats will be released as soon as new naval vessels, now under construction, are delivered but this move has hampered the delivery of tuna to the canneries, most of which are practically idle.

The Tuna Fishing Vessel Owners Association has been extremely active in ironing out the difficulties in connection with operating restrictions, and the canneries have agreed to provide a $5,000 life insurance policy for each fisherman and to pay for war risk insurance on the boats until some satisfactory arrangement can be made through the Maritime Commission for such insurance to be underwritten by Government agencies. Under this temporary plan, the boats are expected to begin operation again in the immediate future.

Under the supervision of the Navy, about 100 sardine boats, of the 150 purse seiners located at San Pedro, have resumed fishing and the entire fleet is preparing for operation, with the canneries paying the war risk insurance in order to get the fish. The present price paid for sardines is $17 a ton as against $13 a year ago.

New Tuna Clipper Launched

At 10:15 Sunday morning. January 18, the 78-foot tuna clipper Sunset was sent racing down the ways of the Hollinger & Millican boat yard in San Diego. This is the first vessel to be launched at the new yard and marked a successful beginning for the new shipyard venture. The new plant is located near the foot of Twenty-eighth Street in the new area assigned for shipyards by the city, and where the Martinolich yard is located, and the yards of the Harbor Boat Works and the Robbins Marine Engine Works, with ways for boat repairs, are being built.

The Sunset is a well-designed vessel of clean lines and is a credit to Ed. Hollinger and D. C. Millican, both veterans in the Pacific Coast boatbuilding business. Hollinger is the engineer for the yard and Millican is the shipwright.

The owners are Victor, Anthony, Fred and Miss Venus Bregante and Mario, John and Cottardo Ghio. Mrs. Catherine Bregante did a capable job of crashing the champagne bottle in bestowing the name on the ship at the exact moment she started down the ways.

Built at a cost of about $75,000, the boat will be powered with a 240-horsepower Atlas engine and will have two 60-horsepower Fairbanks-Morse auxiliaries. Completion is scheduled for some time in April.

New Consolidated Yard

The new yard being built at Wilmington for the Maritime Commission by the Consolidated Steel Corporation of Los Angeles is practically completed and, at the present writing, several keels have been laid and work is progressing rapidly on steel fabrication and erection. This firm is now operating three shipyards; one at Long Beach, where work is going ahead rapidly on two transports for the U. S. Navy; one at Orange, Texas, where U. S. Navy torpedo boat destroyers are being built, and also considerable barge construction is under way; and the new yard at Wilmington, where, as each of the eight shipbuilding ways is ready, a new keel for a C-1-B cargo steamer is laid.

Consolidated has contracts for 31 C-1-B cargo steamers, ten torpedo boat destroyers, and two naval transports.

Shipbuilding Executive Resigns

W. W. Powell, president of the Los Angeles Shipbuilding and Dry Dock Corp. of Los Angeles, resigned, effective January 1, because of pressure from other responsibilities. Mr. Powell will remain on the board of directors, and is still in active relationship with the corporation.

In the interim, and until a worthy successor for the executive post has been found, the financial and policy affairs of the corporation will be managed by the executive committee of the board of directors, under the chairmanship of George R. Larwill.

Los Angeles S. B. & D. D. Corp. has a very well equipped and large capacity shipyard and operates several big floating docks. Contracts for the construction of six large Navy repair ships and a large run of routine and special repair and reconditioning jobs keep the plant busy.

S. S. DANIEL BOONE in the background. Left to right, Mrs. Jerome K. Doolan, sponsor, Mrs. Richard P. Doolan, matron of honor, wife and mother, respectively, of Jerome K. Doolan, right, Calship's general manager

Below: S. S. Daniel Boone at outfitting dock

Lumber Sets Another Record

During 1940, lumber receipts in San Diego averaged slightly more than ten million feet a month for a total of 120,026,214 feet. For the year 1941, receipts almost reached eleven million feet a month with deliveries of 129,365,196 feet delivered by ship in 117 cargoes. The peak month was March with 16,060,000 feet delivered in 16 ships. For the month of December, marking the outbreak of war in the Pacific it is noted that only 4,533,000 feet were delivered in four steamers. It would appear from this that, due to war conditions, a record year cannot be expected for 1942, but a much better monthly average lumber delivery than the December figures would indicate can be expected with the disappearance of the submarine menace on the coast.

The San Diego lumber dealers report that a tremendous amount of lumber is awaiting transport to this port from Northwestern mills to meet national defense demands but expect that most of it will be shipped by rail as most of the available bottoms have been allocated to other routes. They also report a drastic curtailment in new home construction as the greater part of the northern mill output has been requisitioned by the Government.

Personal Notes

Jerome K. Doolan of the California Shipbuilding Corporation has been promoted from assistant to general manager, supplanting John A. McCone who will continue in the post of vice president, in charge of all operations at the plant.

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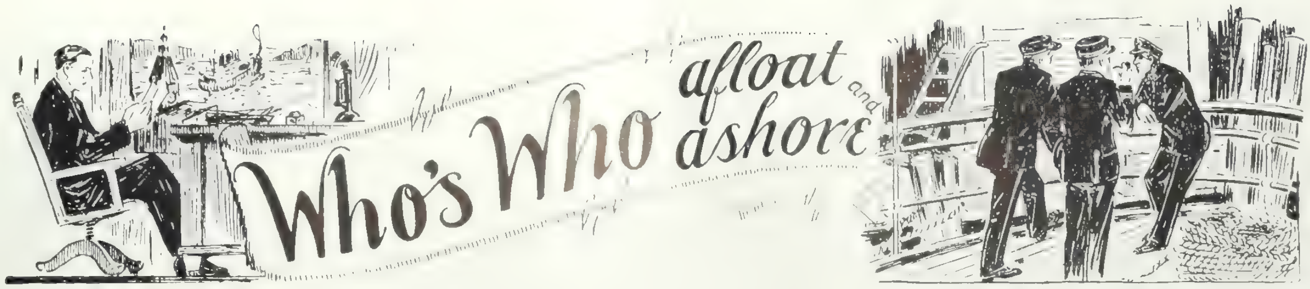
H. L. ESSELBORN

The many West Coast friends of Mr. Esselborn will be glad to learn of his recent appointment as an assistant general manager of the Marine Department of the Standard Oil Company of New Jersey.

In July, 1905, Hermann Esselborn joined the Foreign Shipping Department, Standard Oil Company. In 1911 he joined the Operating Division, Marine Department, Standard Oil Co. of N. J., working in various capacities in that department until 1923, when he was appointed superintendent of operations. In 1926 he became manager of operations, and is now appointed an assistant general manager of the Marine Department.



Who's Who afloat and ashore

Edited by Jerry E. Scanlon

New Federal Reserve Chairman

Word from Washington recently that **Dr. Henry F. Grady,** president of the American President Lines and former Assistant Secretary of State, had been appointed Chairman and Federal Reserve Agent of the Federal Reserve Bank of San Francisco, was hailed with enthusiasm by business and civic leaders of the Bay area.

By virtue of his wide acquaintance in Washington and throughout the nation, and his many contacts abroad, especially in the Far East, Dr. Grady was regarded as an ideal choice for this important assignment. As chairman of the local Federal Reserve Bank, Dr. Grady succeeds Mr. R. C. Force, who is retiring.

It was pointed out here that Dr. Grady's intimate knowledge of trade and economic conditions, particularly in the Orient, where he is personally known to Government heads and other responsible officials, will prove of great value to this area during post-war reconstruction of foreign trade.

San Francisco faces this vast potential trade area and is the natural gateway to Oriental markets. Hence, San Francisco's importance in the scheme of world trade makes the 12th Federal Reserve District second only to New York.

It was announced that Dr. Grady's new appointment would in no way affect his status as president of the American President Lines.

New Academy Director

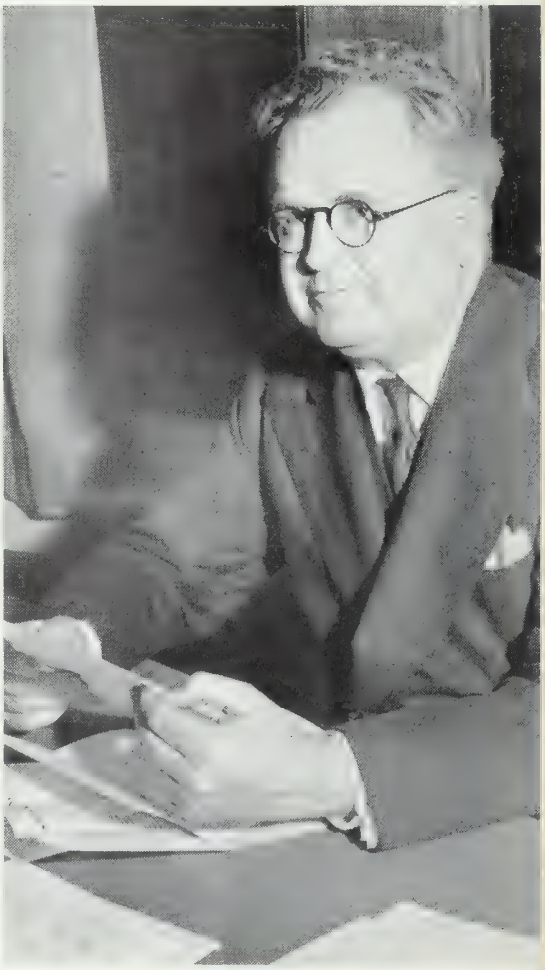
The appointment of **A. J. "Lonnie" Owens,** operating manager for Sudden & Christenson Company, as a director of the California Maritime Academy, was a well-deserved honor to one of the hardest working executives in the Bay area to further the back-to-the-sea movement of American youth.

Owens succeeds to the post formerly held by **Bill Rogers** (son of the late beloved film comedian Will Rogers) who resigned last year. The new director will serve until 1944.

With years of steamship service afloat and ashore to his record, Mr. Owens will bring to the office a wide range of experience. He went to sea for years as a youth, and for twenty years has been identified in responsible posts with several steamship lines.

Mr. Owens is one of the most popular and active members of the Propeller Club of the United States, Port of San Francisco. His father, the late William J. Owens, was marine superintendent of the Oceanic Steamship Company.

A. J. "LONNIE" OWENS
Popular operating manager of Sudden & Christenson, is now a director of the California Maritime Academy



DR. HENRY F. GRADY
President of American President Lines, and newly appointed Chairman and Federal Reserve Agent of the Federal Reserve Bank of San Francisco

Army and Navy Club Expansion

With many hundreds of former Merchant Marine officers of deck and engine room departments now in active Navy service, arriving at and departing from San Francisco from all parts of the United States, the Army & Navy Club of San Francisco, in the Hotel Fairmont, has become more than ever

ROGER LAPHAM

before the rendezvous for shipmates of former years of the Seven Seas.

The club, completely equipped in all respects, maintains: dining room, reading, card and social rooms. Important is the fact that in cooperation with the Army & Navy Club, the Fairmont Hotel extends professional rates to officers of all branches of the service and their families.

Captain Lewis Mesherry, managing director of the club, reports that an augmented staff has been appointed to handle mail and information for out-of-town members, passing through the Port of San Francisco, or on temporary assignment.

Complete details as to Army and Navy regulations with information as to service men's organizations, recreation centers, amusements, hotels and other information is on file and available to the members.

They Are Now In U. S. Service

Two well-known Portland marine men resigned their civilian posts to enter United States Army service and are now aiding the battle against the Axis.

L. W. Hartman, manager of the Portland office of J. T. Steeb & Co., joined the Army Transport Division with the rank of Major, and **Donald M. Kerr,** executive of the States Lines and affiliated organizations, is in the same branch located in the Seattle headquarters. At the time Mr. Kerr entered service he was vice president and director of the States Lines, Pacific-Atlantic Steamship Company (Quaker Line).

John S. Winstead, office manager for the American-Hawaiian Steamship Company in Oakland, is now a lieutenant in the Navy. He is awaiting orders to go to Washington but pending notice is stationed in San Francisco.

K. C. Tripp, western general freight agent for the Moore-McCormack Steamship Company, was drafted the middle of last month to become affiliated with the Pacific Coast general headquarters of the U. S. Maritime Commission in the office of Ernest J. Bradley.

K. C. TRIPP

Now, Richard "Dick" Tripp, 20 years of age, has followed his dad's action in going to the aid of his country by joining the Navy as an aviation cadet.

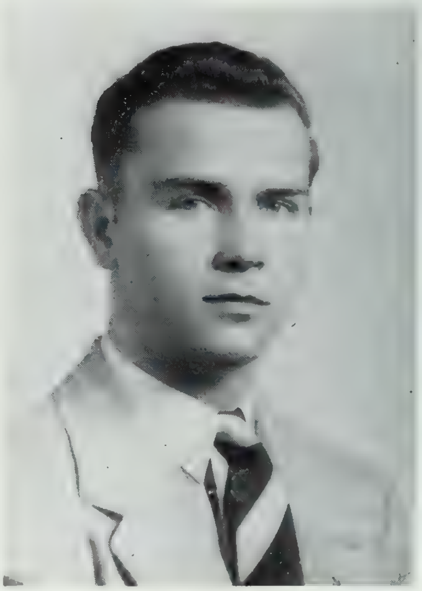
K. C. Tripp is one of the most popular steamship executives on the West Coast.

Richard C. "Dick" Hughes, nephew of R. C. Jones, port engineer for the General Petroleum Corporation with headquarters in Wilmington, has joined the Army as an aviation cadet at March Field. His "Dad," the late Joseph Hughes, was a well-known chief engineer.

A large number of American President Lines employees have joined the armed services of their country since the outbreak of war with Japan. Quite a number of the company's personnel have won commissions for themselves in the U. S. Naval Reserve and are now on active duty. Among the latter are:

E. D. ("Gene") Flaherty, general office manager and personnel director of the American President Lines, was summoned to active service January 15, as a lieutenant commander with the U. S. Naval Reserve. Since coming to San Francisco in 1938, when the old Dollar Line was reorganized into the American President Lines, "Gene" has been one of the most popular members of the latter's staff of executives. He came here as secretary to the late William Gibbs McAdoo when the former U. S. Senator was appointed chairman of the board of the new APL organization. Flaherty later became general office manager, but continued to serve as assistant to Chairman McAdoo until the latter's death in February, 1941. He had been associated with the late Senator for more than 20 years. Lieutenant Commander Flaherty was born in New York and educated in law. He is married and has three children. His family lives in Oakland.

John H. Wholley, assistant freight agent for the American President Lines in San Francisco, has been called



RICHARD "DICK" TRIPP

to active duty with the rank of lieutenant junior grade in the U. S. Naval Reserve.

Lieut. Wholley, a native-born San Franciscan, is the son of the late Colonel John H. Wholley, U. S. A. He attended Sacred Heart School here, and in 1922 started work for the old Dollar Line. He has been with the company (now APL) continuously for nearly 20 years.

John has been a Naval Reservist since April 6, 1925. He is married to the former Clara Hegeler of Danville, Illinois. The Wholleys make their home in San Francisco.

William Sharon, passenger department, a lieutenant junior grade;

Holmes Benson and **Richard Oliphant,** passenger department, now ensigns;

J. Emmett Hayden, Jr., freight department, now an ensign;

Prior to the outbreak of the war, **Hubert MacGowan** of APL's Manila staff joined the Naval Reserve with the rank of lieutenant.

Approximately twenty other employees of the company have gone into various branches of the armed forces, either as selectees or on voluntary enlistments.

Shortly after **Lewis Lapham,** for the last four years head of the American-Hawaiian Line's traffic development department, was promoted to the position of assistant to President John E. Cushing. He was lent to the Army Transport Service, Fort Mason.

JOHN A. STEIN

Despite the heavy duties of the new position with the American-Hawaiian, of which his father, Roger D. Lapham, is chairman of the board, Lewis will continue in his position while also aiding Uncle Sam.

J. R. Wagner, assistant to the freight traffic manager, American President Lines, has been lent to the Army Transport Service, San Francisco.

* * *

John A. Stein, general freight agent for the McCormick Steamship Company, resigned January 31 to serve as coordinator of repairs and supplies in the San Francisco office of the U. S. Maritime Commission.

Widely-known up and down the Pacific Coast among steamship, railroad and truckmen, Mr. Stein has been identified for fifteen years with the McCormick interests, and the last five years held the important position of general freight agent.

LIEUTENANT JOHN H. WHOLLY

Captain Horatio L. McKay, president of Wilford & McKay, steamship agents, is director of the newly established Division of Forwarding, U. S. Maritime Commission. The headquarters are in New York.

Duties of the division are handling the commission's expanding freight forwarding operations that include lend-lease shipments to countries allied with the United States in the war against the Axis nations.

REAR ADMIRAL HOWARD L. VICKERY

The division will expedite and direct movement of cargo from inland cities to the seaboard.

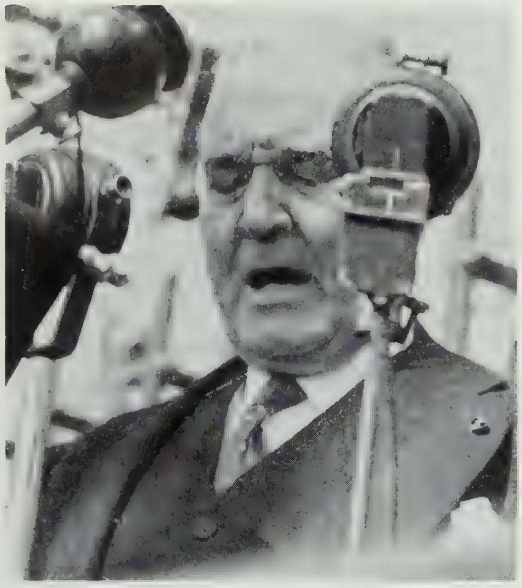
Salute To Rear Admiral Vickery

The news of the promotion of **Captain Howard L. Vickery,** U. S. N. Maritime Commission production expert, to the rank of Rear Admiral was received with a unanimous response of satisfaction by the West Coast shipbuilding industry.

Hundreds of marine men who met the genial but straight-from-the-shoulder-talking Captain during the Propeller Club of the United States convention in San Francisco in October, 1941, will be applauding this promotion.

M. M. P. West Coast Election

For the sixth time, licensed deck officers of the American Merchant Marine on the Pacific Coast reelected **Captain C. F. May** to the presidency of the Masters, Mates and Pilots of America, West Coast Local No. 90, and also balloted to extend his term of office from one to two years.



CAPTAIN EDWARD MACAULEY
U. S. Maritime Commissioner and Chairman of Maritime War Emergency Board

Other officers elected or reelected in the M. M. P. were **J. F. Elb** returned to office as first vice president and **M. Vaughan** as second vice president. **John Cross** is the secretary-treasurer.

Trustees named are **F. J. Leach,** San Francisco; **C. W. F. Rasmussen,** Portland; **E. Thomsen,** Seattle; **J. Ryan,** San Francisco; and **A. E. F. Steinhauer,** San Pedro.

M. W. E. B. Working Well

The new Maritime War Emergency Board is doing excellent work in the handling of matters pertaining to all union business aboard ship.

Ship operators, Maritime Commission officials and the men who man the ships are in accord that Captain Edward Macauley, head of the Emergency Board; John R. Steelman, chief of the United States Conciliation Service; and Frank P. Graham, president of the University of North Carolina, are well qualified to discharge the important duties assigned them by President Roosevelt.

A master mariner of years of experience, Captain Macauley, as a member of the Maritime Commission, is especially favorable to West Coast marine interests as his long residence in San Francisco qualifies him to handle Pacific Coast matters in a sympathetic and understanding manner.

Civil Defense Appointments

San Francisco Chamber of Commerce was notified January 20 of the appointment of **L. B. Daniels,** past chairman of the Chamber's Aviation Committee, as Group Commander of Civil Air Patrol for the San Francisco Bay area, which includes Oakland, Alameda and other East Bay communities. Daniels is a veteran of World War I, in which he served as a lieutenant of the artillery, and has been prominent for many years in aviation activities throughout California. He is an airplane owner and transport pilot.

The Civil Air Patrol will operate under the office of Civilian Defense under the national direction of **Major General John F. Curry.** The immediate job of the Civil Air Patrol will be that of mobilizing as rapidly as possible all civil pilots, mechanics, radio operators, meteorologists and auxiliary in the country for the duration of the emergency.

It is estimated that 250,000 persons will be eligible for membership including 95,000 licensed civil pilots.

Waldo Drake Safe

Waldo Drake, now Lieutenant Commander Drake, USN, in charge of public relations for the Pacific Fleet, for whose safety hundreds of his friends had made inquiries after the Japanese assault on Hawaii, is safe, the Navy Department revealed.

Lieutenant Commander Drake had been somewhere in the Hawaiian area for the last seven months. He was formerly maritime editor of the Los Angeles *Times.*

Grace Appointments

Edward T. Senter, marine superintendent, Grace Line, made the following appointments on the freighter West Modus with the approval of **Captain William F. Hoyt:**

Carl M. Thorsen, chief engineer; **George C. Robert,** chief officer. He was formerly second officer on the Santa Monica, but left the vessel with Captain Hoyt. **John H. Hayes,** formerly third officer on the Santa Monica, was promoted to second officer of

E. J. BRADLEY

Pacific Coast representative of the Division of Emergency Shipping of U. S. M. C., is about the busiest shipping executive on the West Coast. He is now drafting other capable shipping men to assist him in keeping the ships moving. All American ships are now war emergency ships the West Modus, and **Charles Clayton Nogle** is the new third officer.

Chief Thorsen was formerly an advisory engineer for the Maritime Commission. He announced that he had signed **Cesar Sanes,** formerly second on the Santa Monica, to first assistant on the West Modus. **Joe Damon Harris** is the second assistant and **Bert Francis Moroni** is the third assistant.

Adolf G. Engfors is chief steward.

"Cal" McMillan Back on Duty

The United States Navy, in its demand for men who had rendered yeoman service but on the retired list for years, has called back into active duty **Captain C. C. "Cal" McMillan, U. S. C. G.,** one of the Pacific Coast's best known and colorful figures.

Out of service for more than fifteen years, and living down at Burlingame, Captain McMillan was called to duty and is located shore-side in the San Francisco offices of the Coast Guard. Captain McMillan's brother was for years second in command of the San Francisco branch U. S. Hydrographic Office in the Merchants Exchange Building.

McCormick Changes

Pacific Coast steamship men received with surprise the announcement that **J. L. "Jack" Hook, Jr.,** had resigned as district manager of the McCormick Steamship Company in Los Angeles. He had held the post for the last nine years.

W. B. Wickersham, in the lumber sales division of Pope & Talbot, Inc., parent company of McCormick, succeeded Hook.

Hook joined the McCormick interests nineteen years ago as a bill clerk in the San Pedro offices. He advanced through the various positions until 1933, when he was promoted to district manager.

In addition to being district manager of the McCormick Steamship Company, Hook had served as manager of the Inner Harbor Terminal Company, and manager of the Uhlin Machinery Company, all subsidiaries of Pope & Talbot.

The Navy and the Marine Exchanges

The Marine Exchange of Los Angeles Harbor has suspended after eighteen years' operation as a maritime information and lookout bureau. The Navy has taken over the operations of essential units and the civilian personnel at San Pedro had been retained.

However, **Owen E. Durkin,** who was manager, was not included in the Navy's program. He said he had made no immediate plans.

The action will have no bearing on the famed Marine Exchange in the Merchants Exchange Building, San Francisco, oldest of its kind in the United States and known to mariners throughout the world.

"CAL" McMILLAN

M. E. Cremer, manager of the San Francisco Marine Exchange, said his organization had been working with the U. S. Navy since 1940 and had worked out a program long before this country entered the war.

Seaways—Airways—Highways

S. A. "Steve" Stimpson, veteran transportation man, was recently appointed Pacific Coast traffic manager for the Pacific Intermountain Express Company, according to an announcement by **A. K. Humphries,** vice president and general manager of the trucking concern.

Stimpson, well known in the bay area, was for thirteen years district traffic manager for United Air Lines, and before that was representative of the Dollar Steamship Company in the Orient. He and Humphries first became associated in 1926, when the latter helped organize the old Pacific Air Transport, a predecessor of United.

Known as the "Godfather of the airline stewardess," Stimpson conceived the idea of placing pretty young hostesses aboard transport planes. The plan, which was first adopted in San Francisco, has since spread to most of the domestic airlines and even to foreign companies.

The Pacific Intermountain Express operates a fleet of sixty trucks between California and Salt Lake City, Omaha, Chicago and the East.

A Notable Yard Organ

PMR's compliments to Los Angeles Shipbuilding & Dry Dock Company on their new house magazine *The Shipbuilder,* first copy of which made a big hit in our editorial sanctum.

And an orchid goes to John McGrath, the editor, no novice at the job of turning out an interesting accounting of maritime news. For ten years Editor McGrath was marine scribe for Southern California dailies and for five years he was executive secretary of the Waterfront Employers Association of Southern California.

Mr. McGrath is assistant personnel manager at the busy Los Angeles shipyard.

Bingham Overseas Observer

Lieut. Barry Bingham, USN, word of whose arrival in London was received in this country January 14, has gone overseas as an observer for the Office of Civilian Defense for an indefinite stay. He will be attached to the U. S. Embassy, and will make a continuous study of civilian defense in England. In Washington Lieut. Bingham has been in charge of the National Speakers Bureau of OCD.

As president and publisher of the *Courier Journal* and Louisville Times Company, owner and operator of the radio station WHAS, and a director of the Southern Newspaper Association, Lieut. Bingham has been closely associated with national press and radio affairs. He is also well known for his active participation in educational and philanthropic enterprises.

N. J. Traffic Club Elects

The Traffic Club of Jersey City held its annual meeting Tuesday evening, January 13, 1942, at the Masonic Club, Jersey City, and the following officers were unanimously elected:

President, Harry G. Regan, American President Lines; first vice president, E. T. Nevin, Universal Carloading & Distributing Company; second vice president, Arthur Best, General Foods Co.; treasurer, Frank J. Johns, Jos. Dixon Crucible Company; secretary, James J. Cullington, Jersey City Chamber of Commerce.

Board of Governors: Frank E. Kearney, Lackawanna Warehouse Company; W. J. Harrower, Jos. T. Ryerson & Son; A. J. Gernert, Lehigh Valley Railroad Co.; Frank Donlon, Yardley & Company.

The Traffic Club is starting its twenty-second consecutive year of existence and embraces in its membership traffic representatives from the leading industries in Hudson County, the railroads and steamship lines, and takes a very active part in all matters of traffic.

The new president of the club, Harry G. Regan, district freight agent for the American President Lines, has been active in the club for the past fifteen years. He is an active member of the Jersey City Chamber of Commerce, the Traffic Club of Newark, the New York Traffic Club, and is considered an authority on all shipping matters. He possesses a fine tenor voice and takes a very active part in the amusement world.

Mr. Regan was associated with the Panama Pacific Line and the American Hawaiian Line before joining the American President Lines, with whom he has been associated for the past eighteen years.

E. J. MACFARLAN

Forty Years With Standard of Cal.

Standard Oil of California will have to junk their present size service pins if they intend to keep adding stars for each additional five years of employment to the one worn by **Edward J. Macfarlan,** assistant manager of the Export Department.

When **President H. D. Collier,** in the presence of other ranking officials, presented Mr. Macfarlan with his latest pin last month, eight stars were embedded in the insignia. This meant that Mr. Macfarlan had rounded out forty years of continuous service.

In July, 1901, Mr. Macfarlan walked into the manager's office of the Standard Oil, which at the time was located in the Sheldon Building. Under his arm he carried a "Boy Wanted" sign.

"I'm the boy you want," confidently confided the applicant. There were a total of 190 employees on the pay roll at the time. Today, Standard Oil of California has 18,000 employees.

Few men identified with the marine business hold the affections of their fellow men as does "Ed" Macfarlan. With his ever-ready willingness to lend a hand or further a good cause, his refreshing personality and acquaintance places him high in the ranks of "Who's Who" on the Pacific Coast.

Mr. Macfarlan is married and the father of one son, Kenneth, now learning the oil business as a member of the traffic department.

Steamship Officials In the Orient

Fate of a number of steamship men, well known or connected with Pacific Coast companies stationed in the Orient, Philippines and other Far East points, was a matter of intense concern at press time.

It is believed that the American President Lines led the list with the number of men whose safety was endangered by the war. It is believed the following APL men were in Manila when the Japs struck:

Oscar Steen, vice president in charge of the Orient, who arrived in Manila from Shanghai shortly before December 7; **L. P. Jepson,** acting freight agent in the Philippines; **D. Tingling,** Oriental freight traffic manager; **T. B. Wilson,** manager of the Hongkong office; **George McCarthy,** Philippine manager of the passenger office and **E. N. Airres,** formerly of APL's Chicago office.

E. Pirovano, president of the De La Rama Line; **A. V. Rocha** and **John Cook,** vice-president and general manager and operating manager of C. F. Sharp, respectively, were last heard of in Manila.

Neil MacLeod, manager of the steamship department of Smith-Bell, agents for the Bank Line, Klaveness Line and the American Manchurian Line, was stationed in Manila.

A. G. Henderson, Manila manager of the Everett Steamship Corporation, agents for the American Mail Line, is somewhere in the Philippines.

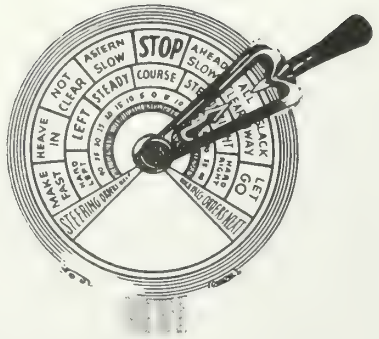
Frank Hansen, Manila manager for the Roosevelt Steamship Company, agents for the Silver Java, Pacific Line and Kerr Steamship Company, was last reported in Manila before hostilities.

O.P.M. Appointment

Appointment of **William M. Sloan,** Chicago, as head of the Telegraph and Cable Section of the Communications Branch, OPM, was announced January 16 by **Leighton H. Peebles,** Chief of the Branch.

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

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RULES OF THE ROAD

IV—CORRECT NAVIGATION LIGHTS

A Question From a Tug

Dear Skipper:

I am employed on a towboat in San Francisco Bay and have been an interested reader of your article for several months. Could you tell me who is legally responsible for the proper lights on the tow?

Yours truly,

H. J. Y.

ANSWER

Whether the tow or the towing vessel is responsible for the lights displayed by the tow is a question that must be decided upon by the facts of the case, rather than by any specific rule. Should a large vessel hire tugs to assist her, and she remains in command of operations, then certainly the master of the larger vessel is responsible for the proper display of lights aboard his vessel. However, in the case of towing barges or unmanned vessels, where the entire operation is in the hands of the master of the towing vessel, then the master of that vessel is responsible for the proper display of lights on the tow in addition to the lights on his own vessel. In many cases, it is rather difficult to place the responsibility, and the contract of towage existing between the two parties would determine if either was solely responsible or if joint responsibility existed.

However, the fact is well established that, when the captain of any tug engaged in the service of towing a vessel which is making use of her own propelling power goes on board said vessel, it is understood and agreed that said tugboat captain becomes the servant of the owners in respect to giving of orders to any of the tugs engaged in the towage service, and in respect to the handling of such vessel.

The fact, however, that the vessel "in command" is responsible does not necessarily relieve the vessel "not in command" from liability for her own fault or failure to observe the rules.

This series will be continued next month.

GENERAL REMARKS

In the previous articles of this series, we discussed and clarified the major points of the rules and the law relating to sound signals used by steamers in both fog and clear weather. This month, the article is devoted to a clarification of the rules governing the correct position and visibility of the required navigation lights used by steamers.

The lights required by the rules must be displayed from sunset to sunrise in all weathers; the fact that there is a long and bright twilight will not excuse a departure from this rule. Periodical inspections should be made at short intervals to see that the lights are properly burning; in addition to the half-hourly report of the lights that is made by the man on lookout, the officer on the bridge would do well to check the lights himself occasionally, especially upon the approach of another vessel. When a vessel is at anchor, it is essential that an efficient watch be maintained, with instructions to observe and to assure continual display of the anchor lights.

All unnecessary lights should be avoided as far as possible in order to keep the background of the prescribed lights darkened so as to make them stand out prominently. Special attention must be given to insure the lights being placed in their correct locations in compliance with the rules. The rules prescribe only the minimum range of visibility required; there is no restriction to having the lights visible for a greater distance than is required by the rules. It should be remembered that the rules were formulated almost fifty years ago, before vessels were fitted with electric lights; had present-day conditions then existed, a greater range of visibility would undoubtedly have been prescribed.

QUESTION

Is there any provision in the law or the Rules of the Road that permits vessels to operate on the high seas at night without running lights during time of war?

ANSWER

Failure to show the prescribed lights in time of war will not excuse either public or private vessels from liability incurred by reason of a collision on the high seas. As a result of World War I, many decisions were rendered by our Admiralty Courts, and one example will clarify the situation. A collision at sea on a moonlight night during war time between the steamships Proteus and Cushing, both without lights, and approaching on nearly opposite courses, was held due to the faults of both ships; the Proteus, which did not see the Cushing until when less than a mile away, being at fault for immediately going hard-right and proceeding at full speed, without signaling her change of course or showing her lights; and the Cushing, which saw the Proteus when five miles away, for proceeding at full speed without showing her lights, changing her course, or giving any signal until the ships were less than half a mile apart.

The prevailing practice of vessels running without lights on the high seas will undoubtedly bring about similar situations; however, the logic applied seems to indicate that the risk of collision is "the lesser of the two evils" when in waters infested by belligerent vessels.

Masthead Light (Article 2)

Under the International Rules, the white masthead light must be twenty to forty feet above the hull; if the beam of the vessel exceeds twenty feet, then the height shall be not less than the beam. However, it need not exceed a height of forty feet above the hull. The light must be visible for at least five miles and show through an unbroken arc of twenty points; the light must not show more than two points abaft the beam on either side. When checking the height of a light, the words—"above the hull"—are defined as—"above the forecastle deck." The masthead light requirements are the same in the Inland Rules, except that the height of the light above the hull is not specified.

Range Light

Under the International Rules, the after-range light is an optional requirement; however, should it be carried, then it shall be characteristic of the masthead light and located at least fifteen feet higher than the forward light, with the horizontal distance between them greater than the vertical distance.

Under the Inland Rules, the after-range light is required on all steam vessels (except seagoing vessels and ferryboats) and it must, under Inland Rules, be a thirty-two point light, visible all around the horizon, and in a position at least fifteen feet higher than the forward masthead light, and the horizontal distance between them shall be greater than the vertical distance.

Owing to the great value of the information conveyed by the after-range light, its present day use is practically universal in seagoing vessels; when the after-range light is displayed, then the slightest change of course is immediately apparent to another vessel. It should be noted that a seagoing vessel when entering United States inland waters is *not* required to change the after-range light from its twenty-point to a thirty-two-point arc of visibility.

Side Lights (Article 2)

The requirements for the red and green side lights are the same in both the International and Inland Rules. The green light must be displayed on the starboard side, and the red light on the port side; they must be visible for at least two miles over an arc of ten points, from dead ahead to two points abaft the beam on their respective sides.

The side lights must be fitted with proper screens, extending at least three feet forward of the light, and so arranged as to prevent the rays of light from extending across the vessel's bow. This can usually be arranged by placing a small wooden batten at the forward outboard end of the screen; you can test the correct alignment of the screens by standing at the stem of your ship at night. If either of the two side lights can be seen from that position, then they are incorrectly screened and must be adjusted. It becomes obvious that, if the side lights are properly screened so as not to show across the bow, then there will be a blind spot directly ahead of the ship for about a ship's length (depending upon the beam of the ship, and the distance between the side lights), in which triangle neither side light will be visible. This is of no consequence, because dead ahead of the position of intersection of the rays of light, both side lights will be visible to an approaching steamer.

Stern Light (Article 10)

The requirement to carry a fixed stern light is optional; however, if it is not carried, then a vessel has the additional burden of maintaining a stern lookout in order to show a flare-up light to any overtaking vessels. Should the vessel carry a fixed stern light, as is the prevailing custom with modern vessels, the light shall be placed as nearly as possible on the same level as the side lights, and be visible for a distance of at least one mile through an unbroken arc on twelve points of the compass; i. e., from right aft to two points abaft the beam on each side of the vessel.

Towing Lights (Article 3)

When a steamer takes another vessel in tow, she announces the particular situation by means of additional white masthead lights.

International Rules

The phraseology of Article 3 of the International Rules often causes confusion and doubt as to when to carry one or two additional white masthead lights. In order to carry two additional lights, making a total of three, including the regular masthead light, two conditions must be fulfilled:

1. There must be more than one vessel in tow.
2. The total length of the tow, measured from the stern of the towing vessel to the end of the tow, must exceed six hundred feet.

When towing only one vessel, regardless of the length of the tow line, only one additional white light will be carried, making a total of two white masthead lights. These lights are all of the same construction and character as the white masthead light. Should the vessel towing require a total of two lights, then one must be placed at least six feet above the regular white masthead light; should a total of three lights be required, then the third light is placed either six feet above the second light, or six feet below the regular masthead light, but in no case shall the lower light be less than fourteen feet above the hull.

In addition to the white masthead lights, the vessel towing must carry her regular side lights and may also carry a small white light abaft the funnel for the vessel towed to steer by; however, this small light shall not be visible forward of the beam.

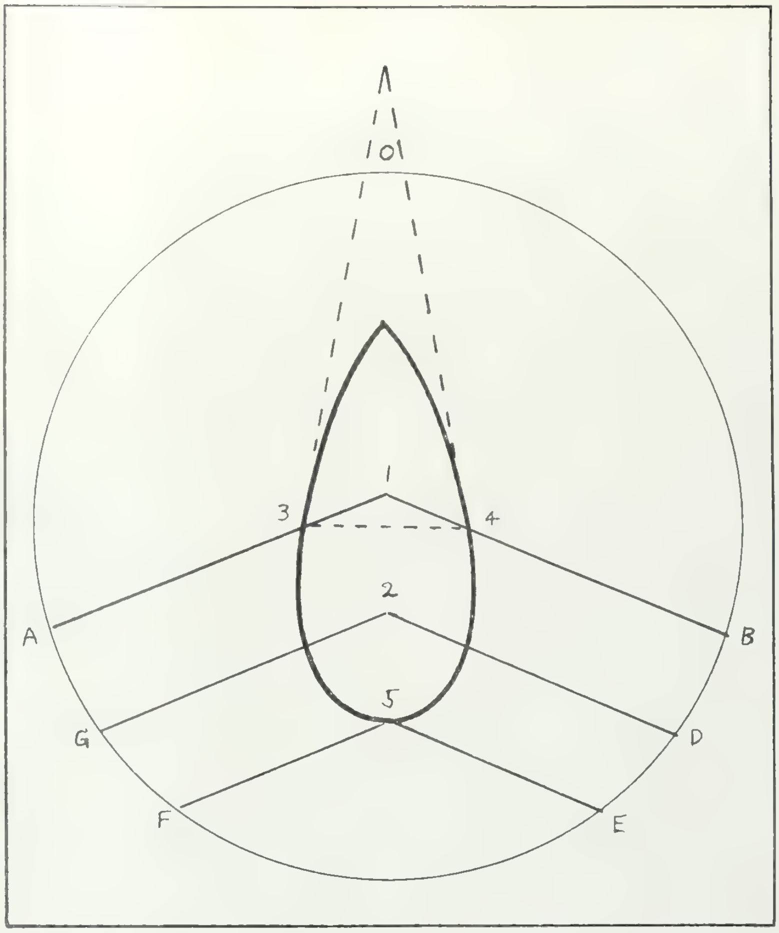


DIAGRAM SHOWING ARC OF VISIBILITY OF NAVIGATION LIGHTS

1. Position of masthead light, visible through arc AOB (20 points)
2. Position of after-range light, visible under International Rules, through arc GAOBD and from a distance through arc AOB, under the Inland Rules, this light is visible all around the horizon.
3. Port side light (red), visible through arc AO (10 points).
4. Starboard side light (green), visible through arc BO (10 points)
5. Position of white stern light, visible through arc FE, and from a distance through arc AGFEDB (12 points).

Within triangle 3 O 4, neither side light is visible if each is correctly screened.

Inland Rules

(Except Red River of the North and rivers emptying into the Gulf of Mexico and their tributaries—most of these vessels propel the tow by pushing at the rear of the tow, and they show special lights prescribed by the pilot rules.)

Steam vessels when towing another vessel or vessels alongside in inland waters shall carry a total of two white lights in a vertical line at least three feet apart, and, when towing more than one vessel astern, regardless of the length of the tow, shall carry a total of three white lights in a vertical line not less than three feet apart. These lights may be carried on either the foremast or the mainmast. If carried on the foremast, then all the lights will be twenty-point lights, and one of them would be the regular masthead light. If carried on the mainmast, then all the lights will be thirty-two-point lights, and one of them will be the regular range light. There is a great advantage in carrying the towing lights on the mainmast, because on account of their thirty-two-point visibility notice of the presence of a tow is given to an overtaking vessel. In addition to these lights, a vessel towing must carry the regular side lights, and may also carry a small white light abaft the funnel for the vessel towed to steer by; however, this light must not be visible forward of the beam.

Vessel Being Towed

The standard provisions of Article 5 of both the International and the Inland Rules require the vessel being towed to carry the side lights only. The Pilot Rules, promulgated by the Supervising Inspectors of the Bureau of Marine Inspection and Navigation, under authority of the Inland Rules, provide numerous exceptions to the standard provisions of Article 5, such as lights for barges, scows and other vessels of a nondescript type; however, these exceptions apply only to the waterways for which they are prescribed.

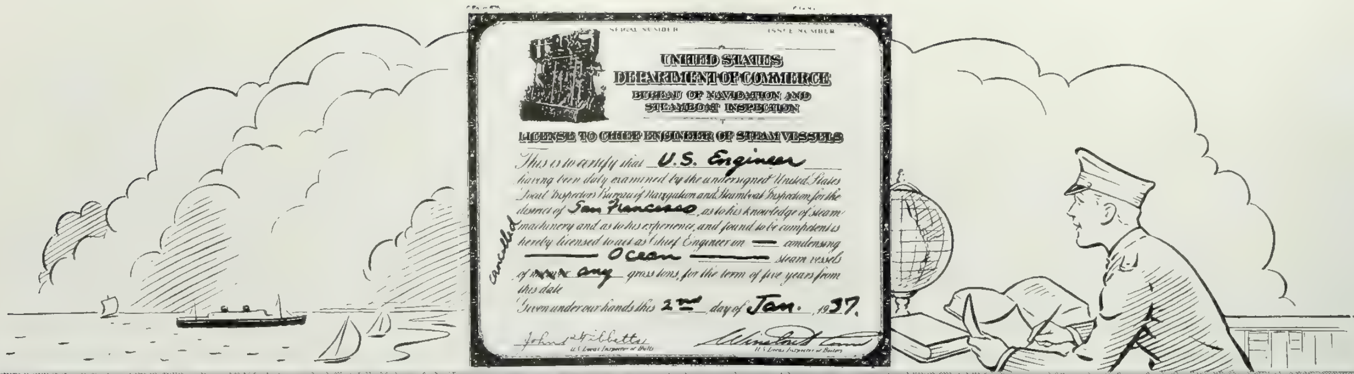
Vessel Towing a Submerged Object (Inland Waters Only)

Occasionally, a situation arises when the object being towed is awash to such an extent that it is not apparent by day or capable of carrying side lights by night; in this case the tug will display special day and night signals.

The day signal consists of two shapes, one above the other, not less than six feet apart, and the lower shape to be carried not less than ten feet above the deck house. The shapes shall be in the shape of a double frustrum of a cone, base to base, not less than two feet in diameter at the center, nor less than eight inches at the ends of the cones and to be not less than four feet lengthwise from end to end; the upper shape to be marked in alternate horizontal stripes of black and white, eight inches in width, and the lower to be painted a solid bright red.

By night, the vessel towing the submerged object shall carry her regular side lights, but in place of the white towing lights shall display four lights in a vertical line, not less than three feet nor more than six feet apart, the upper and lower of such lights to be white and the two middle lights to be red. If these lights are carried on the foremast, then they will all be twenty-point lights, and one will be the regular masthead light; if carried on the mainmast, then one light will be the regular range light, and they will all be thirty-two-point lights.

(Page 72, please)



SERIAL NUMBER

ISSUE NUMBER

UNITED STATES
DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION AND
STEAMBOAT INSPECTION

LICENSE TO CHIEF ENGINEER OF STEAM VESSELS

This is to certify that **U.S. Engineer** having been duly examined by the undersigned United States Local Inspectors Bureau of Navigation and Steamboat Inspection for the district of **San Francisco**, as to his knowledge of steam machinery and as to his experience, and found to be competent is hereby licensed to act as Chief Engineer on — condensing **Ocean** steam vessels of ~~xxxx~~ **any** gross tons, for the term of five years from this date

Given under our hands this **2nd** day of **Jan.** 1937.

cancelled

U.S. Local Inspector of Hulls

U.S. Local Inspector of Boilers

Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

ENGINEERING THERMODYNAMICS

THE GENERAL GAS LAW

In our last article, we discussed the general statement that the pressure times the volume, divided by the temperature of a gas, gave a figure which was true for any value of the pressure, volume or temperature; that changing one value changed one, or the other, or both, to make this figure remain the same. Thus, for any gas, we can say that $\frac{P \times V}{T} = K$.

This value K is called the general gas constant. It is understood, of course, that it is good for a specific weight of gas, usually one pound, and that the temperature is in absolute degrees F.; pressure in pounds per square inch (psi) absolute; and volume is in cubic feet.

The accompanying table lists the gas constant for several gases.

The gas constant is, of course, for one pound weight of the gas. It would be twice as much for two pounds, or in general, if W is weight of gas in pounds, we have:

$$W \times K = \frac{P \times V}{T} \text{ and transposing,}$$

$$P = \frac{W \times T \times K}{V}$$

$$V = \frac{W \times T \times K}{P}$$

$$T = \frac{P \times V}{W \times K} \text{ and } W = \frac{P \times V}{T \times K}$$

$$\text{hence } D = \frac{P}{K \times T}$$

DENSITY OF GASES

Name of Gas	Density Pounds Per Cubic Foot at 14.7 Lbs. Per Sq. In. Pressure Absolute		Density with Respect to Air 1
	At 64° F.	At 32° F.	
Air	.0761	.0807	1.000
Ammonia	.04483	.0476	.590
Acetylene	.0684	.0725	.899
Hydrogen	.00529	.00562	.0696
Carbon Dioxide	.1156	.1227	1.520
Carbon Monoxide	.0734	.078	.968
Ethylene	.0738	.0780	.969
Methane	.0421	.0447	.554
Nitrogen	.0737	.0783	.970
Oxygen	.0840	.0892	1.105

SPECIAL NOTE

This series on thermodynamics is to be temporarily discontinued. Our March issue will open a series on the electric-drive tanker. An attempt will be made to cover the special and unusual features and new developments in engineering. This is brought about by the many requests for this type of information. A great many of this type of ship have been and will be put into service. The subject will be covered for the assistant and junior engineers, with a mixture of theory and practice, electrical and mechanical.

When the subject of thermodynamics is started again, it will cover: heat, energy, gas and vapor cycles leading to engine and turbine efficiencies; steam rates; and refrigeration.

Sincerely,
"The Chief"

The density of gases is tabulated herewith, and attention is called to the density of carbon dioxide with respects to air. It is over half again as heavy as air, which accounts for its deadly effect in settling to the bottom of tanks and being difficult to purge.

GENERAL GAS CONSTANT AND SPECIFIC HEAT

Name of Gas	Chemical Symbol	Gas Constant K	Specific Heat At Constant Pressure S_p	Specific Heat At Constant Volume S_v	S_p S_v	S_p S_v × 778
Air		53.34	.241	.171	1.40	53.34
Ammonia	NH_3	90.50	.523	.399	1.31	90.50
Acetylene	C_2H_2	59.34	.350	.270	1.28	59.34
Carbon Dioxide	CO_2	35.09	.210	.160	1.31	35.09
Carbon Monoxide	CO	55.14	.243	.172	1.41	55.14
Ethylene	C_2H_4	55.08	.400	.330	1.20	55.08
Hydrogen	H_2	765.9	3.42	2.440	1.40	765.9
Methane	CH_4	96.31	.593	.450	1.32	96.31
Nitrogen	N_2	54.99	.247	.176	1.40	54.99
Sulphur Dioxide	SO_2	24.10	.154	.123	1.25	24.10

Note the low density of hydrogen and its high specific heat.

The difference in density of a gas at different temperatures is the source of natural draft for furnaces. For instance, a 400° F. difference in air temperature between stack and atmosphere should give a pressure equivalent of about one-quarter inch of water head in 35 foot rise. But the hot gases containing 10 or 13 per cent carbon dioxide are much heavier than air, and this figure is materially reduced. To double the rise, we double the difference in head. Hence, we go to tall stacks ashore, but forced draft at sea.

Attention is called to two very interesting facts disclosed in the tabulation of specific heats and gas constants. Specific heat of a gas, like that of a solid, is the heat in Btu required to raise its temperature one degree F. But unlike solids, adding heat or raising temperature will either increase the volume or the pressure, depending on whether we add heat in a closed vessel, constant volume, or add heat and allow expansion at constant pressure. These two values of specific heat are tabulated; one at constant pressure, S_p, and one at constant volume, S_v.

The first thing of interest is that, if we divide one by the other, such as $S_p \div S_v$, we get a number which is just about the same for all gases. There is some variation, but there is enough approximation to point to an interesting fundamental relationship of all gases. S_p is always more than S_v, because, as we add heat, expansion is allowed, but against a constant pressure in the S_p test. This expansion against a load represents work done externally and must be accounted for or supplied by additional heat added to raise the temperature. At constant volume no heat is converted to work, so less heat is needed. Thus, the excess of S_p over S_v represents external work and a conversion of heat to work.

The other very interesting fact is that, if we subtract one from the other, thus $S_p - S_v$, and divide this difference into the gas constant, we get one single number for each and every gas. Moreover, this number is none other than an old friend, 778, the number of foot pounds of work in one Btu of heat. What an interesting relationship! A cross connection between heat and work! Also, if we multiply the difference by 778, we get the gas constant, thus $(S_p - S_v)\ 778 = K$. This is tabulated in the last column of the table, and note that this product is in every case the same as the gas constant number. We may meet this interesting situation again as we go deeper into the theory of thermodynamics.

News from Pacific Southwest

(Continued from page 49)

George A. Wallace of the American Fishermen's Tunaboat Association has requested the city of San Diego to assign a full-time crew to the fire boat Bill Kettner to keep this necessary vessel in readiness at all times. Under the present arrangement, the fire boat cannot be sent out until a crew is brought to the vessel from one of the uptown fire stations. The point is well taken, particularly under San Diego's present rate of industrial expansion, and a fire boat ready at all times with a full crew on hand has become a vital necessity.

MRS. JEROME K. DOOLAN
christens Daniel Boone

Captain O. J. Hall advises that the new ferryboat Star, of his Star & Crescent Boat Company, is a 65-foot boat with a 100-hp Cummins diesel engine, and will have accommodations for 185 passengers in their North Island run. Capt. Hall has recently commissioned the company's 9000-barrel welded steel oil barge No. 19, and the new barge is in service under tow of the tug Palomar, pending completion of their new tug San Miguel, which is about to be launched at the San Diego Marine Construction Company.

Charles A. Landers, of the Tunaboat Owners' Association, asks the arming of the long-range tuna boats operating on the banks off the west coast of South and Central America. He asserts that these vessels are quite capable of withstanding the shock of gun fire. Mr. Landers also registers a protest against the recent order of the Panama Canal authorities which would restrict the operation of these boats to north of 5 degrees north latitude.

Practical Suggestions

ON COPPER CONSERVATION

by Wm. H. Kennedy

General Manager, Condenser Service and Engineering Co.

OPM Order M-9-c covers in great detail the conservation of copper. There is definitely a shortage of copper in the country. The OPM order clearly sets forth production and amount needed for defense work, as well as setting forth non-defense uses of copper which *must* be eliminated.

Each one in an organization is expected to do his stipulated task. The Government expects and insists that each organization have men completely familiar with each order to exactly carry out the details of the order. In the marine field, each organization that is not set up to study and eliminate unnecessary uses of copper, copper alloys (rolled or cast) is distinctly failing in carrying out OPM order M-9-c. The question arises as to which marine functions and individuals are responsible for considering where and how they can save copper and copper alloys; to begin with, the groups that write the specifications, then the designer of individual parts, then the port staffs that order replacements.

Committees Necessary

It is sincerely believed that a committee should be formed, composed of men from the classification society, marine insurance, naval architects, superintendent-engineers, ship repair yards, Maritime Commission and marine departments of the Government. The Government should be required to curtail unnecessary uses of copper alloys. Such a committee would definitely decide what and where copper alloys could be eliminated. The selection of committees and sub-committees is of prime importance.

Practical experience, covering many years of experience with heat exchangers, suggests to the author a few items where copper alloys and other scarce metals can be saved by the use of substitutes. While the suggestions expressed may run athwart the normal desire and habit of many years of practice, all of us should be willing to change our habits for the purpose at hand.

OPM WARNS ON COPPER VIOLATIONS

Washington, D. C., Jan. 16—Manufacturers using copper or copper base in the manufacture of certain civilian items are in direct violation of law, unless forms required by OPM are filed, Donald M. Nelson, Director of Priorities, warned today.

Use of copper in the manufacture of more than a hundred less essential civilian items is prohibited after March 31. Manufacture of these items is permitted from January 1 to March 31. Extension to March 31 is not available to manufacturers unless all conditions of the copper order are met.

Ferrules Eliminated

While I definitely believe in the use of corset lace and ferrules for condenser packing, it has been proven over years of service that fiber packing, with no ferrules, does make and keep condenser tube ends absolutely tight. Some organizations even put a piece of unnecessary lead foil in the discharge ends. It has not proven harmful, so with these substitutions it is hereby suggested that no one be permitted to use ferrules for the duration—an OPM order could be issued to that effect.

Tube Mixtures

In recent years there has been a tendency to use aluminum brass tubes, copper nickel tubes and other fancy mixtures. There are unquestionably a few special conditions that warrant their use. Except for those special conditions, which the committee should determine, the use of these special mixtures should be prohibited for the duration. We need the aluminum and the nickel.

During the last war, we used mostly Muntz metal tubes in condensers, as well as other heat exchangers. These tubes worked out well for the emergency. In fact, many of these tubes gave a life up to 10 or 12 years. Today, for the emergency we should use admiralty mixture tubes and not mixtures which require nickel and aluminum. Many of the new ships may be sunk at an early date, and we are building for an emergency to produce an article that serves the emergency. Why should any of us be permitted to use scarce materials that should definitely be conserved? Substitute and continue to substitute. It requires complete knowledge of a subject to eliminate metals normally used.

There is a lack of facilities to manufacture sufficient aluminum bronze and copper nickel tubes. Further, there is no logic in their use in such an extreme emergency even if the manufacturing bottle-neck did not exist. Admiralty tubes will do the job perfectly, even as Muntz did the work during World War I. Delays now exist because aluminum brass tubes cannot be delivered.

Condenser Specifications

Emergency ships for emergency duties should be America's motto. Substitute where shortages exist. Use of non-ferrous material can and should be reduced. Specialized knowledge pertaining to each group of materials will permit logical and practical substitutes. It requires no particular brains, patriotism or understanding to make a piece of equipment. Let's discontinue making any part of a vessel from expensive materials where shortages exist.

For condensers we can use steel tube sheets instead of Muntz or naval rolled. A steel tube sheet properly coated will last at least six years. OPM M-9-c requires drastic curtailment of non-ferrous metals. Here are the suggestions for Emergency Period Condensers: Cast iron waterboxes; steel tube sheets, 1¼″ thick, coated; admiralty tubes; tubes rolled at inlet ends; tubes, packed fiber, discharge end; or rolled both ends; ⅜″ thick steel support plates; steel shell; no through stays.

Heat Exchanger Specifications

Lubricating oil coolers. Extreme specifications require cupro-nickel tubes; cupro-nickel tube sheets; bronze heads, tinned; brass baffles. This makes a swell cooler. However, we have a duty in the present emergency.

Specifications for a lubricating oil cooler to be first class, long lasting and to meet the present emergency would be: shell of steel; tube sheets, steel, coated or poured lead with brass rings; tubes, admiralty mixture; baffles, steel; water boxes, cast iron or, where there is shock from gun-fire, cast steel; floating tube sheet; removable bundle.

Feedwater heater, emergency specifications: Straight tube type, steel shell; steel tube sheets; steel tubes or, if circumstances demand, copper or admiralty tubes; welded steel or cast steel heads; tubes rolled both ends; expansion joints in shell.

Evaporaters and distillers. Pressure to coils, below 10 lb. There is no logical engineering economy in using pressures above 10 lb. Steel shells; water boxes, cast iron, welded or cast steel; copper tubes.

Committee Functions

The committee should decide and specify what materials to use.

Some engineers in the past and some now specify condenser tubes to be tinned. Definitely, tinning of condenser tubes in this emergency should be prohibited.

Generally, all heat exchangers should be steel where fresh water or oil is circulated. Tubes to be steel, unless a matter of heat transfer prohibits, or the other side will rapidly deteriorate with steel. For the past few years tubes have been made of two metals: bi-metal tubes. As an illustration for ammonia and salt water, ammonia side, steel with an insert of admiralty for salt water. Any combination of two metals can be made up.

There should be an OPM order prohibiting the manufacture of condensers or other heat exchangers of copper alloys on the Great Lakes and on non-contaminated fresh waters throughout the country. This should also apply to all industrial plants, public utilities, oil refineries or any user of such equipment. This does not apply to tubes where heat transfer factors would greatly enlarge the units. A condenser as an illustration would be steel shell; steel tube sheets; steel supports; steel stays; admiralty, Muntz, arsenical admiralty or arsenical copper tubes; water boxes, cast iron or welded steel.

This memorandum and the thought herein expressed cover only a very small portion of the possible part material substitution. The possibilities are unlimited. Carefully selected committees, with each member having specialized knowledge of his subject, will develop many thoughts, many savings, many metal substitutions, and will speed up construction and reduce costs.

The Marine SURVEYOR'S NOTEBOOK

EDITORIAL NOTE

Occasionally there come to the editor's desk certain bits of information resulting from marine surveyors' work, and very valuable to operating marine personnel and to designing naval architects and marine engineers.

We propose to publish these intermittently under the above heading. The opinions expressed are those of the surveyor from whom the information has come.

The editor will welcome and publish constructive criticism, comment or new ideas. Exchange of thought on a problem usually leads to the best solution.

Flexible Couplings Proving Worth

Since the advent of the long range, full tuna clipper, about 1925, a great deal of shafting trouble has been experienced due to the peculiar design of these big vessels. Common practice, brought about by the method of fishing, places the propelling machinery as far forward as possible. The long line of shafting to deliver the power to the propeller often becomes subject to undue strains from the alternate hogging and sagging inclination of the wooden hulls under varying conditions of load.

The installation of double bulkheads fore and aft from the engine room to the stern has not alleviated this difficulty to any marked degree. Instead, with the tendency to increase the length of new boats, the trouble is aggravated. These big boats, like all of the Pacific Coast fishing vessels, "just growed" without a great amount of engineering design entering into the structure.

In the case of a small vessel, the question of hogging or sagging is not of particular importance, considering a length of 50 feet; but, when 100 feet and more is the rule for the tuna fleet, lengths inspiring the names of Atlantic liners, shaft alignment becomes a problem. Considering that the hogging or sagging moment approximates the cube of the length, depending on bulkheading and hull proportions, the matter of providing means of compensating for normal misalignment becomes of prime importance.

Following a series of troubles and shaft breakages from this cause, Guy Silva, master and owner of the clipper Emma R. S., came to the conclusion that some means must be provided to overcome this chronic misalignment. A flexible coupling was designed to meet the requirements, and in April, 1941, two were installed in this boat, one at the engine and the other at the end of the line shafting. This coupling was designed to absorb both ahead and astern thrust and to provide for both angular and axial misalignment. As described in the April issue of Pacific Marine Review, this consists of a series of radial pins recessed into the face of the coupling flanges and fitted with rubber bushings.

Eight months of continuous operation with these couplings has convinced Captain Silva of their worth, and he reports that not only have they eliminated the misalignment difficulty but he notes a marked increase in engine revolutions, a consequent gain in speed and a decrease in fuel consumption, all of which he ascribes to the relief of misalignment load on the engine. Also, he has experienced a loss of a certain amount of fish through high temperature generated at the line shaft bearings on past voyages, but since the installation of the universal couplings he has not lost a pound from this cause.

The operation of the couplings in the Emma R. S. has been closely watched by other boat owners and the highly satisfactory operation has caused the owners of the boat Prospect to order a duplicate installation, which is now being made. It was considered that the rubber bushings would give trouble and possibly break down under the load of the thrust combined with the friction set up by the misalignment and Captain Silva ordered a spare set of these bushings. After two voyages, they are still in their original packages and the wear on the original bushings is too slight to be measured.

Blackout Affects Diesel Operation

In taking the precautions for blackout operations of diesel vessels at sea, the owners are hardly likely to give consideration to any effect on the operation of the engines. However, under certain conditions, the blacking-out of the engine room presents a definite hazard, and the problem has been given close attention by diesel experts of the Navy Department, engine builders and owners.

In the case of a certain British vessel, which we are not permitted to name, her two eight-cylinder diesel engines operated with full satisfaction for about fourteen years under normal conditions. Then, with the outbreak of war in the Atlantic, the vessel was blacked out, and troubles began. Valves commenced to stick, causing more than the normal number of stops on a voyage; and unusual wear and abnormal operation of the air compressors, built into the forward end of the engines, was noted. On her last voyage from the United Kingdom, the blackout measures were increased and the trouble with the engines also increased, requiring twenty-seven stops between the port of departure and her arrival at a Pacific Coast port. With the engineers unable to account for the trouble, the master ordered a complete investigation and refused to proceed until the cause was located and steps taken to overcome the difficulty.

The Classification Surveyor, upon being called in, noted the engine room skylight was closed and a heavy wooden casing built over it. Also, all entrances were either closed and sealed, or fitted with heavy, double curtains of canvas. The two engine-room ventilators were open, but there was no means of egress for stale air and the upper part of the engine room was a blue haze, although at the time only the auxiliary engine was running. The engineer stated that the conditions in the upper part of the engine room, while at sea, were almost unbearable. It was noted that the air compressor intake and all four of the main engine air intakes were in the upper engine room.

Taking down the compressors, each three-cylinder, three-stage, compressing the air to 860 pounds, revealed a heavy wet deposit in the low and intermediate stages and a brown, dry deposit in the high pressure stage. The intermediate rings were found stuck solid and the plug piston of a high pressure could be drawn only with great difficulty. Examining the air pipes revealed that a heavy black oily deposit was present and was progressively worse below the intake. Hence, it was quite apparent that the trouble was due to foul air. The covers of the main engine intakes were removed and the same black oily deposit found. Experts employed by the vessel owners and sent by the Navy Department made a thorough investigation and concurred completely in the theory first advanced by the classification surveyor. The intakes were then altered and fresh air ducts led from the ventilators to the intakes to provide clear air for the compressors.

Expansion
U. S. M. C. TRAINING PROGRAM

In his war message to Congress on January 6, President Roosevelt, among other measures, directed a 50 per cent expansion of the 12-million-ton, two-year shipbuilding program of the United States Maritime Commission. In order to meet manning requirements for these new ships, the Maritime Commission in January announced arrangements to increase the capacity of its training facilities, both for licensed officers and for apprentice seamen.

Experienced seamen with necessary qualifications are expected to furnish more than half of the 15,000 new officers required. Within 90 days, new buildings at Fort Trumbull, New London, Connecticut, will double its capacity for a seaman-officer training, from 500 to 1000 men, each four-months' training period. The Pacific Coast seaman-officer training facility at Alameda, California, will make use of a new station ship, Delta Queen, which will boost its capacity from 200 to 400 men.

The United States Maritime Commission cadet training program, plus graduates of four State Nautical Academies, should produce nearly 3000 licensed officers within the next two years. Under present Maritime Commission regulations, cadets are assigned to shore schools located at New York, San Francisco and New Orleans for two months, and then serve 10 months on merchant ships. They report back to cadet schools for 10 months of advanced study before taking their examinations for license.

The New York school will probably be located on Long Island, and should be occupied soon. About 350 cadets will be accommodated in permanent quarters and 450 in temporary buildings. At the San Francisco Cadet School, the use of temporary structures will expand the accommodations to care for a total of 350 cadets. At the Cadet School in New Orleans, temporary buildings used, in addition to the Training Ship North Star, will care for 100 cadets, as against the 25 now there. Cadets enroll in the Naval Reserve and graduate as Ensigns Merchant Marine Naval Reserve, and are assigned as licensed officers on merchant ships.

The four state maritime academies have been requested to increase their enrollments promptly, by the establishment of temporary quarters ashore.

It is estimated that at least 60,000 additional seamen will be required. To care for the expanded enrollment of apprentice seamen at the Hoffman Island, New York, station, additional barracks will be ready within 90 days. This will add 500 to the present 800 capacity. Also it will enable the S. S. Boston, now attached there as a Station Ship, to be used for training purposes. Added facilities also are being placed at the Maritime Commission's Swinburne Island, New York, station. Similar expansions are taking place at the Port Hueneme apprentice seaman training school near Los Angeles, California, and at the St. Petersburg, Florida, school.

Pools for seamen qualified by the Maritime Commission training schools and ready to board ships will be maintained at the Seamen's Church Institute in New York City and also at San Francisco and New Orleans. These new locations will release space at schools now used for this purpose and thus permit a larger apprentice seamen enrollment. Added accommodations at Gallups Island, Boston, will allow a larger enrollment in the radio, cooks and bakers schools.

Young men who desire to make a career of the Merchant Marine and who are interested in Maritime Commission officer training may write for application information, as to the necessary scholastic and physical requirements, to the Supervisor of Cadet Training, United States Maritime Commission, Washington, D. C. No competitive examinations are required.

NEW LICENSES ON PACIFIC COAST

Deck Officers' Licenses for December

SAN FRANCISCO

Name and Grade	Class	Condition
A. Mattsson, Master	SS, any GT	RG
E. A. Quinn, Master	SS, any GT	RG
D. W. Asquith, Chief	SS, any GT	RG
M. N. Engs, Chief	SS, any GT	RG
G. H. Hines, Chief	SS, any GT	RG
C. H. Tubbs, Chief	SS, any GT	RG
L. J. Leoni, Chief	CW SS, any GT	RG
J. H. Fletcher, 2d Mate	SS, any GT	O
A. R. Henkel, 2d Mate	SS, any GT	O
L. A. Huff, 2d Mate	SS, any GT	O
V. D. Johnston, 2d Mate	SS, any GT	O
C. P. Lyall, 2d Mate	SS, any GT	O
H. N. Mathews, 2d Mate	SS, any GT	O
C. E. Meyers, 2d Mate	SS, any GT	O
F. L. Powlesland, 2d Mate	SS, any GT	O
J. C. Walsh, 2d Mate	SS, any GT	O
J. A. White, 2d Mate	SS, any GT	O
D. S. Wilson, 2d Mate	SS, any GT	O
H. J. Boem, 2d Mate	SS, any GT	RG
J. R. Caldwell, 2d Mate	SS, any GT	RG
W. E. Carrick, 2d Mate	SS, any GT	RG
F. L. Johnson, 2d Mate	SS, any GT	RG
F. E. Romero, 2d Mate	SS, any GT	RG
A. S. Vathne, 2d Mate	SS, any GT	RG
J. B. Adams, 3d Mate	SS, any GT	O
C. F. Arwine, 3d Mate	SS, any GT	O
H. C. Bangs, 3d Mate	SS, any GT	O
R. J. Bennet, 3d Mate	SS, any GT	O
J. J. Brennan, 3d Mate	SS, any GT	O
J. T. Brewer, 3d Mate	SS, any GT	O
D. R. Campbell, 3d Mate	SS, any GT	O
D. C. Chandler, 3d Mate	SS, any GT	O
F. C. Childs, 3d Mate	SS, any GT	O
R. S. Claunch, 3d Mate	SS, any GT	O
L. I. Cooper, 3d Mate	SS, any GT	O
E. R. Elliott, 3d Mate	SS, any GT	O
O. Gundersen, 3d Mate	SS, any GT	O
E. B. Hendrix, 3d Mate	SS, any GT	O
R. G. Hudkins, 3d Mate	SS, any GT	O
V. A. Jones, 3d Mate	SS, any GT	O
J. J. Lawler, 3d Mate	SS, any GT	O
J. J. MacLaird, 3d Mate	SS, any GT	O
H. Marcinowski, 3d Mate	SS, any GT	O
H. H. McNeill, 3d Mate	SS, any GT	O
S. J. Medvetz, 3d Mate	SS, any GT	O
W. F. Nesser, 3d Mate	SS, any GT	O
C. C. Nogle, 3d Mate	SS, any GT	O
E. C. Nolan, 3d Mate	SS, any GT	O
F. K. Pace, 3d Mate	SS, any GT	O
W. B. Page, 3d Mate	SS, any GT	O
C. C. Rasmussen, 3d Mate	SS, any GT	O
J. L. Ray, 3d Mate	SS, any GT	O
A. Reid, Jr., 3d Mate	SS, any GT	O
J. D. Seibert, 3d Mate	SS, any GT	O
D. J. Seymour, 3d Mate	SS, any GT	O
C. E. Sims, 3d Mate	SS, any GT	O
J. T. Smith, 3d Mate	SS, any GT	O
R. C. Smith, 3d Mate	SS, any GT	O
W. H. Strock, 3d Mate	SS, any GT	O
R. L. Tyson, 3d Mate	SS, any GT	O
E. Tywoniack, 3d Mate	SS, any GT	O
L. M. Wallace, 3d Mate	SS, any GT	O
R. H. Wetmore, 3d Mate	SS, any GT	O
A. J. Zambik, 3d Mate	SS, any GT	O

SEATTLE

Name and Grade	Class	Condition
E. J. Burke, Chief	SS, any GT	RG
D. J. Benson, 2d Mate	SS, any GT	O
A. W. Eastman, 2d Mate	SS, any GT	RG
G. E. Thuesen, Jr., 2d Mate	SS, any GT	RG
D. B. Barth, 3d Mate	SS, any GT	O
A. B. Johnson, 3d Mate	SS, any GT	O
A. S. Skucy, 3d Mate	SS, any GT	RG

Engineers' Licenses for December

JUNEAU, ALASKA

Name and Grade	Class	Condition
H. V. Proctor, 1st Asst.	SS, 500 tons	O
A. H. Cockerill, Chief	MS, 3500 tons	O
[illegible] 2d Asst.	MS, any GT	O

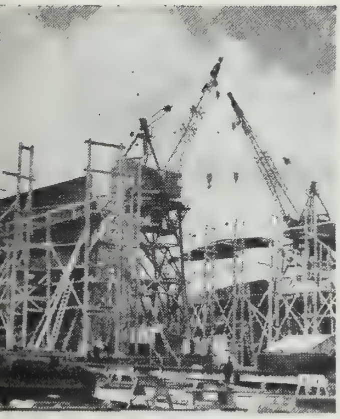
SAN FRANCISCO

Name and Grade	Class	Condition
D. H. Donaldson, Jr., Chief	SS, any GT	RG
G. M. Frank, Chief	SS, any GT	RG
F. Jennings, Chief	SS, any GT	RG
J. Leyer, Chief	SS, any GT	RG
L. L. Lipke, Chief	SS, any GT	RG
J. L. Paton, Chief	SS, any GT	RG
F. L. Burns, 1st Asst.	SS, any GT	RG
M. Colker, 1st Asst.	SS, any GT	RG
T. D. Dupuy, 1st Asst.	SS, any GT	RG
J. A. Halvig, 1st Asst.	SS, any GT	RG
A. E. Ingram, 1st Asst.	SS, any GT	RG
W. M. Jones, 1st Asst.	SS, any GT	RG
J. H. Lee, 1st Asst.	SS, any GT	RG
J. McCue, 1st Asst.	SS, any GT	RG
H. F. Zuppe, 1st Asst.	SS, any GT	RG
J. W. Foran, 2d Asst.	SS, any GT	O
O. P. Harlee, 2d Asst.	SS, any GT	O
L. T. Maher, 2d Asst.	SS, any GT	O
J. P. McArdle, 2d Asst.	SS, any GT	O
R. L. Minor, 2d Asst.	SS, any GT	O
H. C. Wigginton, 2d Asst.	SS, any GT	O
W. W. Wright, 2d Asst.	SS, any GT	O
I. J. Allen, 2d Asst.	SS, any GT	RG
W. F. Averill, 2d Asst.	SS, any GT	RG
G. F. Brady, Jr., 2d Asst.	SS, any GT	RG
R. H. Brannon, 2d Asst.	SS, any GT	RG
F. L. Martin, Jr., 2d Asst.	SS, any GT	RG
H. C. Reeks, 2d Asst.	SS, any GT	RG
R. A. Becker, 3d Asst.	SS, any GT	O
W. H. Broussard, 3d Asst.	SS, any GT	O
H. G. Chaplin, 3d Asst.	SS, any GT	O
A. C. De Poister, 3d Asst.	SS, any GT	O
Z. H. Dobbs, 3d Asst.	SS, any GT	O
J. I. Dolan, 3d Asst.	SS, any GT	O
F. B. Flanders, 3d Asst.	SS, any GT	O
H. Fleetman, 3d Asst.	SS, any GT	O
G. S. Gibson, 3d Asst.	SS, any GT	O
C. A. Gonsalves, 3d Asst.	SS, any GT	O
J. B. Hansen, 3d Asst.	SS, any GT	O
A. V. Irwin, 3d Asst.	SS, any GT	O
J. H. Jamme, 3d Asst.	SS, any GT	O
J. A. Jellings, 3d Asst.	SS, any GT	O
D. H. Kittredge, 3d Asst.	SS, any GT	O
E. D. Mannix, 3d Asst.	SS, any GT	O
L. M. McCarthy, 3d Asst.	SS, any GT	O
C. W. Moniot, 3d Asst.	SS, any GT	O
F. J. Murphy, 3d Asst.	SS, any GT	O
C. J. O'Dowd, 3d Asst.	SS, any GT	O
J. E. Perry, 3d Asst.	SS, any GT	O
W. S. Reid, 3d Asst.	SS, any GT	O
J. P. Scott, Jr., 3d Asst.	SS, any GT	O
C. E. Smith, 3d Asst.	SS, any GT	O
E. O. Stracke, 3d Asst.	SS, any GT	O
G. M. Spragg, 3d Asst.	SS, any GT	O
H. D. Strode, 3d Asst.	SS, any GT	O
F. Tawada, 3d Asst.	SS, any GT	O
K. Vaughan, 3d Asst.	SS, any GT	O
W. V. Waugh, 3d Asst.	SS, any GT	O
E. S. Wiggins, 3d Asst.	SS, any GT	O
H. Woodward, 3d Asst.	SS, any GT	O
R. E. Chesley, Chief	MS, any GT	O
C. F. Hodgson, Chief	MS, any GT	O
F. Wetzel, Chief	MS, any GT	O
H. S. Johnson, 1st Asst.	MS, any GT	O
H. K. Short, 1st Asst.	MS, any GT	O

SEATTLE

Name and Grade	Class	Condition
C. Sanes, 1st Asst.	SS, any GT	RG
M. W. Nichols, Chief	MS, any GT	O

Abbreviations: SS is steamship; MS is motor ship; GT is gross tonnage; O is original license; RG is raise of grade. All of these licenses are for ocean service.



On the Ways—

SHIPS IN THE MAKING

LATEST NEWS FROM AMERICAN SHIPYARDS

History's Largest Naval Appropriation

On January 25 the House of Representatives at Washington passed and sent on to the Senate the largest naval appropriation measure in history. The Senate will undoubtedly rush this bill through to the President, and as it is largely his own bill, he will sign it.

It carries approximately $20,000,000,000 in cash and contract authorizations for the purpose of making the "U. S. Navy supreme over the sea, on the sea, and under the sea."

This act, in addition to billions for construction of various types of naval ships and aircraft, carries millions for the expansion and betterment of naval shore establishments — navy yards, training quarters, supply bases, aviation bases. Over 12 millions in this category goes to Pacific Coast shore stations of the Navy.

Shipyards all over the United States have been divided into two classes, i.e.—those working for the Navy and those working for the Maritime Commission. In addition to the great Navy Yards at Mare Island and Puget Sound, there are a number of the larger Pacific Coast shipyards working exclusively on naval hulls. Among these are:

The new yard of Moore Dry Dock Co., Oakland, Calif.

The Seattle yard of the Seattle-Tacoma Shipbuilding Corp.

The San Francisco and San Pedro yards of the Bethlehem Steel Co.

The Associated Shipbuilders of Seattle.

The Lake Washington Shipyards of Houghton, Wash.

The General Engineering Co., Alameda, Calif.

The United Engineering Co., Alameda, Calif.

Willamette Iron & Steel Co., Portland, Oregon.

Commercial Iron Works, Portland, Oregon.

Albina Machine Works, Portland, Oregon.

All of these yards and many wood shipbuilding plants are very busy now on fighting ships and auxiliary craft for the Navy.

The passage of this bill will cause large expansion in all of these establishments and the assurance that every shipbuilding way will be kept busy.

APPROPRIATION ENLARGED

As we go to press, the Senate has passed this Naval Appropriation bill with over six billion dollars added, mostly for naval plane base and carrier construction.

If previous commitments were based on a two-ocean navy, this one must be based on the traditional "Seven Seas."

Joshua Hendy To Build Geared Turbines

Westinghouse has announced a license agreement, authorizing Joshua Hendy Iron Works of Sunnyvale, California, to use its plans and processes to produce marine turbines, gears and auxiliary apparatus. This will speed up production for the Navy and the U. S. Maritime Commission by helping a California firm to build vital propulsion equipment.

Joshua Hendy Iron Works was established in 1856 as a metal fabricating concern. The Hendy plant is now at work on reciprocating steam engines for Liberty type cargo ships being built at Portland, Oregon; Los Angeles and Richmond, California. They are associated with enterprises headed by a number of Pacific Coast industrialists, including Henry J. Kaiser, Felix Kahn and Charles Moore.

To help them manufacture turbines, Hendy engineers will be provided with manufacturing data, drawings and records assembled by Westinghouse during its 45 years of turbine production.

Moore Dry Dock Launches and Lays

In December the Moore Dry Dock Co. of Oakland, California, launched a C-2 on the 4th, and another on the 30th, naming them Alcoa Corsair and Alcoa Cruiser, respectively. These are the last two of three building for the U. S. Maritime Commission and the Alcoa Steamship Co. The third ship, named Alcoa Courier, was launched October 21, 1941. It is now estimated that these ships will be delivered: the

ABOVE: Mrs. Jerome K. Doolan christens S. S. Daniel Boone at "Calship" where her husband is general manager

BELOW: Chas. Palmroth, "Calship" shipwright, presents flowers to sponsor

FLANGE FITTINGS *for Every* INSTALLATION

LOS ANGELES STEEL CASTING COMPANY

Manufactured of Carbon Moly Steel; with tensile strength of 90,000 lbs. per square inch. Tested to 3 times the stated working pressure—metal thickness from 1/4" to 1/2" over specifications — made to meet A.P.I., Marine, Steam, and various other standards. A.S.A. Standards B16E—1939. Steel Specification ASTM A157-C1.

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*NOTE: STAINLESS STEEL FITTINGS MADE TO ORDER.

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Alcoa Courier on June 1, 1942; the Alcoa Corsair on July 21, 1942; and the Alcoa Cruiser, December 28, 1942.

On the ways from which these three vessels were launched, keels were immediately laid for another trio, builder's Hulls Nos. 214, whose keel was laid on October 23, 1941; 215, whose keel was laid December 4, 1941; and 216, whose keel was laid December 31, 1941.

Keels for five submarine rescue vessels for the U. S. Navy have been laid also in recent months at this yard. One on September 15, two on September 30, and two on October 15, 1941.

Fifty-three More "Libertys"

On January 26, the United States Maritime Commission awarded a contract for 53 additional Liberty ships—EC-2 type cargo vessels—to make a total of 1038 of that type to date in the Commission's wartime program.

This brings the total Commission awards in ten days (January 16-26) to 713 new ships of approximately 7,500,000 deadweight tons to be constructed at an estimated cost of nearly $1,290,000,000.

This contract was awarded to the North Carolina Shipbuilding Company, Wilmington, North Carolina. It brings the Commission's schedules nearer to the goal set by President Roosevelt, of 8,000,000 deadweight tons in 1942, and 10,000,000 deadweight tons in 1943.

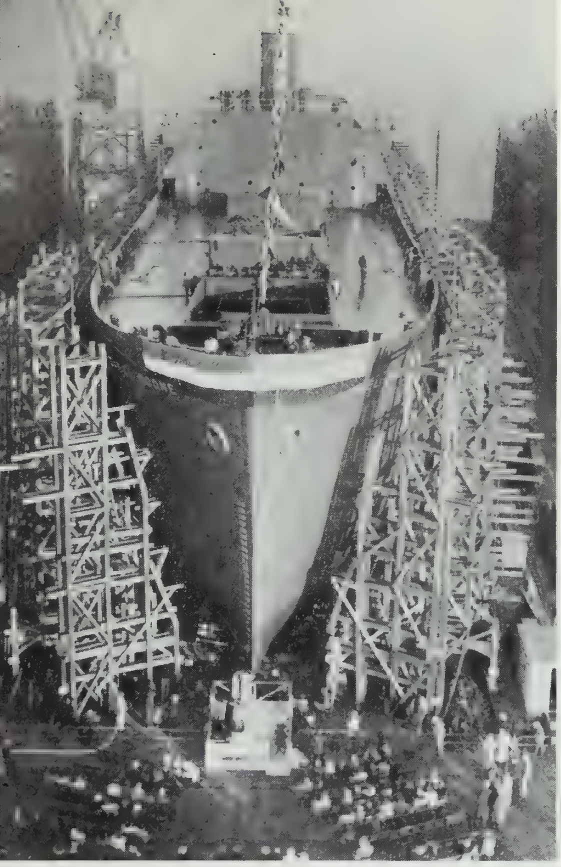
The North Carolina Shipbuilding Company already had under contract and construction 37 ships, most of which are to be delivered in 1942.

Twenty-Eight More for Delta

Continuing expansion of the wartime merchant shipbuilding program announced by President Roosevelt, the Maritime Commission on January 21 approved contracts for the construction of 28 more Liberty ships by the Delta Shipbuilding Company, Inc., New Orleans, Louisiana. On January 17, the Commission announced completion of negotiations for 632 additional vessels.

The New Orleans yard, which is now engaged in the construction of 33 Liberty ships, will complete all 61 vessels under contract to it by the end of 1943. This will be accomplished by making greater use of existing facilities. The New Orleans yard has eight shipways.

Award of this contract increases the total of Liberty ships under contract to 997. This type is a 10,500-dwt. cargo vessel, which through mass production methods can be turned out in four to six months.



DANIEL BOONE ready at California Shipbuilding Corp.

Launchings

John Adams, a Liberty ship of 10,500 deadweight tons, was launched January 18 at the Richmond Shipbuilding Corporation yard, Richmond, California. The Rev. H. M. Peterson, chaplain of the Twelfth Naval District, delivered the invocation. Mrs. W. W. Scott, wife of the mayor of Richmond, was sponsor. J. R. Jago, acting plant engineer, spoke on behalf of the Maritime Commission.

John Adams is the second Liberty ship launched at this yard.

Other recent Liberty ship launchings include: Daniel Boone at the California Shipbuilding Corporation yard, Los Angeles; and Nathaniel Greene at the North Carolina Shipbuilding Company yard, Wilmington, N. C.

The Seattle-Tacoma Shipbuilding Corporation has launched Bogue, a C-3 type cargo carrier of 12,500 deadweight tons, at its Tacoma yard. This vessel, formerly the Steel Advocate, has been transferred to the armed forces.

The tanker Kalkay was launched Saturday, January 17, at the Sun Shipbuilding and Dry Dock Company yard at Chester, Pennsylvania. Mrs. Edward Macauley, wife of Captain Macauley, USN (Retired), member of the Maritime Commission, was sponsor.

Western Pipe's New L. A. Yard

The new yard of the Western Pipe and Steel Company at Los Angeles Harbor is making progress. Construction work on building-ways and shops is proceeding with great rapidity. The firm has contracts for building several vessels for the U. S. Navy.

This yard, it is said, has some very advanced arrangements and equipment for welding and flame-cutting that will greatly facilitate the fabrication of ship shapes and the erection of hulls.

ABOVE: At the Tacoma yard of the Seattle-Tacoma Shipbuilding Corp., Mrs. Wm. Miller, Jr., christens S. S. Bogue, assisted by R. J. Lamont, president of the S-T S. Corp.

RIGHT: Bogue goes to outfitting dock

New Barge Bids Invited

All bids for construction of 450 wooden non-propelled deck cargo barges, opened by the Maritime Commission January 6, have been rejected, the Commission announced on January 17.

These bids were on a lump-sum basis, for completed barges to be delivered either at New Orleans or Mobile. Approximately 30 bids were received.

New bids will be invited for knocked-down, or unassembled, barges, f. o. b. any shipping point in the United States. Not less than 50 nor more than 100 barges will be allocated to any one construction firm.

The barges will have a carrying capacity of 99 short tons. They are to be 60 feet long, 18 feet wide, and with a depth of 5 feet.

Visual Training For Welders

The all-color training picture "Inside of Arc Welding," now ready for

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and Industrial Repairs
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GENERAL ENGINEERING and DRY DOCK COMPANY

release to schools and training groups, after six months of preparation, was produced by Raphael G. Wolff, and is designed to speed up the training of the thousands of apprentice welders required for the building of ships, planes, tanks, and other armaments.

Because of its content of heretofore unphotographed phenomena "Inside of Arc Welding" will be of unusual interest to experienced, as well as apprentice welders. It illustrates the techniques of arc control and electrode manipulation, and actually shows what goes on inside the electric arc.

Filming of this subject was accomplished with great difficulty by the application of new lighting methods which permitted the camera to pick up the entire welding process. It is believed that this is the first time the process has ever been filmed even in black and white, and certainly it has never been filmed in color.

The picture consists partly of animated cartoons and partly of the actual welding shots. It features also the antics of "Joe McGee, the Welder," a cartoon character who seems destined to take his place among such immortals as Donald Duck and Popeye the Sailor.

Anyone interested can obtain complete information on cost and method of distribution by writing to this magazine.

ASSEMBLY LINE FOR SUB-CHASERS

These pictures show PC sub-chaser hulls on an assembly line leading to the launching ways at the Pittsburgh plant of the Dravo Corporation

Production-Line Methods On Welded Sub-Chasers

Production-line methods have been applied to the construction of arc-welded submarine chasers at Pittsburgh, Pa., where 15 of the diesel-powered vessels are being constructed by the Dravo Corporation.

When the PC-490 was completed, it was the first time in three-quarters of a century that a warship had been launched in the Pittsburgh area. Now, because of the rapidity of arc welding and the production-line set-up, one of these boats is scheduled to slide into the river each month, until the 15 are completed.

The hulls are all welded, the work being done with equipment supplied by The Lincoln Electric Company of Cleveland, Ohio.

These vessels, 165 feet long and costing $600,000 each, move down the runways toward the river as the work of arc welding and assembling progresses.

The frames, side and bottom plating and bulkheads are assembled and welded upside down in three sections to a hull. The sections to make a hull are then righted and welded together on the production ways to make a complete hull. Three hulls are on the production ways continuously, moving over toward the launching ways as they are completed. When the one nearest the river is launched, the second hull moves to the launching way and another hull is added at the inshore end of the production ways.

The PC-490, completely equipped with twin-diesel engines and the last word in modern marine design and construction, is shown in one of the illustrations ready for launching. She was commissioned January 15, 1942.

In addition to these 15 sub-chasers, the Dravo Corporation also has an order for 15 mine sweepers and net tenders, which will be built by the same construction methods.

FIRE HAZARDS ON PIERS

Compiled by National Board of Fire Underwriters

A review of conditions today indicates that there are two factors not normally found in connection with piers but which exist because of the unusual conditions brought about by the present war emergency and by the depression, which has lasted through the past ten years or more. This depression, which was world-wide in its extent, very seriously reduced the amount of shipping and correspondingly resulted in less earning for those who owned or controlled the piers and wharves of American cities. There has been little new building of waterfront structures, and the degree of maintenance has been very materially curtailed. In addition, many large concerns, such as the railroads, who formerly occupied and used the piers and wharves, have found it necessary to lease or lend these structures to other concerns, many of which were not particularly interested in maintaining the structures in first-class condition, nor would they supervise and maintain the fire protection features.

Following this depression period, of several years' duration, we now have a situation where large concentrations of materials of all kinds, including many of very hazardous nature, can be found on the piers and wharves of most of our seaport cities. Because of the uncertainty of the movement of ocean-going vessels and the interruption of normal railroad service through the transportation of troops and supplies in connection with the training of our increased army, many of these waterfront structures have large accumulations of supplies. Large supplies of oils and naval stores ordered by the French Government are still stored on some waterfront property.

In addition to the above new factors, there are many old factors, which are largely of a potential nature. Many of the pier structures have very deficient private protection. It is the opinion of the National Board of Fire Underwriters that no large pier superstructure in which material is handled or stored can be considered as definitely protected unless it is equipped with automatic sprinklers and has suitable hose outlets for hose.

More Cooperation Needed

There has in many cases been insufficient cooperation between the users of pier structures and the local fire department. This involves not only the question of inspections by the fire department, but also that of failure on the part of owners or occupants to call the fire department immediately on discovery of a fire. This does not mean that the organization of a private fire brigade is not a worthwhile procedure. The work done by such a fire brigade during the time necessary for the public fire department to respond will be of great value, but there is no excuse for the officer of such a brigade if he does not immediately call the fire department, as the type of building and other features of pier structures is such that there is a high probability of having all the equipment and man power that can be concentrated on the pier.

Many of the owners have increased their watch service. An important item is the character of the men employed for this service and the training which they should have. A guard or watchman should be a man physically fit and above the average in intelligence.

Automatic Protection

There are many places where automatic fire alarm service and automatic protection against robbery and sabotage can be provided at a considerable saving in cost over that for watchmen. One recent development has been the use of the electric eye and the invisible ray as a means of protection against robbery. These rays may be so located that no boat can approach the water end of the pier without discovery and the sounding of an alarm. The automatic fire alarm system is next to the automatic sprinkler system as an aid in the prevention of destruction of property by fire. It discovers a fire before it has reached the stage where the fire department would have a severe fight to prevent total destruction of the property.

Increased private fire protection, particularly the installation of automatic sprinklers, but including in many cases elevated tanks, private pumps, hose, extinguishers, fire pails and other minor fire fighting equipment, are all of vital importance at the present time. It should be recognized that any expenditure of money for the installation of private protection is a permanent improvement and not just one made for the present emergency. The cost of maintaining such equipment and systems is small, and it will be of value for many years to come.

Close cooperation between the city and the plant owner should not end with the use of the municipal fire department, but should include the installation of city mains and hydrants near the pier property. Municipal fire alarm boxes should be readily available.

Inspection Service

Irrespective of how thorough the inspection service of the owner or lessee of the pier property may be, a frequent thorough inspection by the fire department or the fire-prevention bureau of the municipality should be welcomed. These inspections, in addition to calling the owner's attention to hazardous conditions, also permit the various members of the fire department to become acquainted with the conditions that exist, and which may have a very definite influence on the fighting of fires on the pier or wharf. The advice which these inspectors can give to the representatives or the owners is often of the greatest of value.

To those who have made a study of pier fires, it is the large unbroken area which constitutes the greatest hazard. The superstructure on piers and the understructure when of wood constitute horizontal flues which allow a

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small fire to be quickly whipped into a raging mass of flame. The direction of the wind in a pier structure is usually from the cooler water end to the warmer land end, which means that fire fighting from the land end is severely restricted. Where an intermediate wall or partition, or several intermediate partitions can be provided, even though the partition is not of a character that would withstand a severe fire for more than 30 minutes, it would give the firemen a vantage point from which they could more effectively fight a fire.

Piers are not accessible to land companies except at one end. It therefore becomes necessary to fight fires by means of fire boats, which can also serve as tugboats to remove boats which are loading and unloading, to prevent their ignition. A type of fire boat which would be of great value has a pumping capacity of 4000 or 5000 gallons a minute, can maneuver with great ease, and therefore is suitable for river work, and could, before the present shortage of material existed, be built for approximately $60,000.

STEADY AS YOU GO!

(Continued from page 59)

Summary

On account of the range light being an optional requirement in the International Rules, the following confusing situations could exist on the high seas, or in other waters where the International Rules govern:

When seen from head-on:

1. Red and green side lights with *two* vertical white lights between could resemble:

(a) A steamer with a range light and without a tow.

(b) A steamer without a range light and having one vessel in tow.

2. Red and green side lights with *three* vertical white lights between could resemble:

(a) A steamer with a range light and having one vessel in tow.

(b) A steamer without a range light and having more than one vessel in tow, and the length of the tow exceeding six hundred feet.

3. Red and green side lights and four vertical white lights between would be:

(a) A vessel with a range light and having more than one vessel in tow, and the length of the tow exceeding six hundred feet.

* * *

Under the Inland Rules of the United States, where the after-range light is compulsory, when seen from head-on:

1. Red and green side lights with *two* vertical white lights between would be:

A steam vessel without a tow.

2. Red and green side lights with *three* vertical white lights between would be:

A vessel with a tow alongside.

3. Red and green side lights with *four* vertical white lights between would be:

A vessel with a tow astern on a hawser.

4. Red and green side lights with *five* vertical lights between, the two upper and the lower light white and the others red, would be:

A vessel towing a submerged object.

It may be argued that the vertical distance between the two upper lights when seen from head-on would indicate whether or not the vessel is carrying a range light, but the fact remains that the apparent distance between two lights is very deceptive from a distance of a couple of miles. The only safe way to determine the true position of the lights is to change your course a little to the right and open up the other vessel's range; the lights will then immediately reveal their true identity.

Galley Design Specialists Needed

Among the unusual types of persons the Government is trying to find now are those who are qualified to design galleys on ships, and kitchen and cafeteria spaces and equipment in buildings.

Applicants must not have passed their 60th birthday unless they are entitled to veteran preference. Persons over the age limit may apply, although they can not be certified for permanent appointment. Their names will be listed, if they meet all except the age requirements, for possible use in meeting defense needs which can not be met through the usual means.

Persons who can qualify are urged to apply at once. Application forms, with Announcement No. 190 giving further information may be obtained from the Secretary, Board of U. S. Civil Service Examiners at any first- or second-class post office, or the United States Civil Service Commission, Washington, D. C.

Applications must be on file at the Washington office of the Commission not later than March 2, 1942.

Dry Dock Designers Busy

Crandall Dry Dock Engineers, Cambridge, Mass., has been engaged by Kingston Industrial Works, Kingston, Jamaica, to design and construct a railway drydock with a lifting capacity of 800 tons. The cradle is to be 170 feet long over the keel blocks, with the sub-structure constructed of structural steel, with the transverse beams, deck and balance of the superstructure of wood, and the tracks will be designed and constructed to provide depths of water over keel blocks of 9 feet forward and 14 feet aft. It is anticipated that this railway drydock will be complete and in operation early in the second quarter of 1942.

This firm is also preparing plans and specifications for a 200-ton railway drydock for Robinson Marine Construction Company, Inc., Benton Harbor, Michigan.

Running LIGHTS

Who When Where

Joe Costello Appoints

Joseph M. Costello, president of the J. M. Costello Supply Company of Los Angeles Harbor, announces a number of important expansion moves to further increase his service to the maritime and allied industries in Southern California. He has completely remodeled his headquarters building and warehouse property at 221 Avalon Boulevard, Wilmington, Calif. A rearrangement of stock rooms and display space is meeting with widespread compliment from the Los Angeles Harbor marine fraternity.

Enlargement of the staff at the Costello organization is also announced. A. J. ("Al") Boro is now office manager. Mr. Boro was with the Richfield marine department under the late "Bill" Chisholm. He is widely known in both marine and industrial circles. A. J. Di Rocco also has joined the Costello firm, serving the shipping trade.

Ilg Assigns New Posts

With the advent of 1942, several promotions were made in the sales organization of the Ilg Electric Ventilating Co., of Chicago, Illinois, according to an announcement made by P. D. Briggs, general sales manager.

Byron L. Casey of the Chicago city sales office has been named as district manager of the Northern Territory, supervising branch offices in Chicago, Milwaukee, Minneapolis, Galesburg and South Bend.

Wallace G. Burbo has been appointed as manager of the Boston branch office.

Charles E. Parks, formerly manager of the Pittsburgh branch office, has been transferred to Los Angeles, where he will assume new duties as district manager of the Pacific Coast Territory. Branch offices in Los Angeles, San Francisco, Seattle, Salt Lake City, San Diego, Phoenix and El Paso will be under his supervision.

Left to right: A. J. Di Rocco; Mrs. E. S. Moore; J. M. Costello; A. J. "Al" Boro; William Rudy, Pacific Coast manager of Xzit Sales Company

JOE COSTELLO and BILL RUDY

Charles H. Schneider, formerly in the Philadelphia branch office, assumes the post vacated by Parks, as manager of the Pittsburgh branch office. The Pittsburgh office now becomes a part of the Middle Atlantic Territory, under the supervision of C. W. Smith at Philadelphia.

In Houston, Texas, W. M. Vernor has been placed in charge of the Ilg branch office under the jurisdiction of Joseph J. Friedler, manager of the Southern Territory.

TYPICAL SCENES aboard the California Maritime Academy's schoolship Golden State are these taken upon the occasion last October when officers and cadets were hosts to Propeller Club, Port of San Francisco members. At the January graduation exercises, S. F. Propeller President Arthur B. Poole addressed the cadets. High lights of his talk appear below

News of the Propeller Clubs of the United States

Port of San Francisco

On January 10th ARTHUR B. POOLE, president of the Port of San Francisco Propeller Club, gave the inspirational address to graduates of the California Maritime Academy.

PMR is glad to present to its readers highlights of this message.

You men are more than ready to do your part in the test of our country of which the editor speaks. Your work is far more important than you expected it to be when you entered the California Maritime Academy. The very life of our nation requires that fighting planes, tanks, provisions, guns, rubber, copper, tungsten, and many other articles and commodities be moved by water from one point to another. The ships coming out at the amazing rate of two a day beginning with the second quarter of 1942, will call eagerly for your services. You have the ability to operate the new and old ships, the ability to move essential cargoes, the ability to meet with resourcefulness all the difficulties to be encountered in these times of stress.

It would be too much to say that civilization consisted of nothing but trade. But it would not be going too far to say that were it not for division of labor and the trade which division of labor entails, civilization would have made scant progress, our standard of living would be very low, and war would be a continuous part of life.

World trade requires world peace. And world peace can be established only on a basis of world trade—where military conquest is not necessary to gain articles or commodities produced in other lands. That is what President Roosevelt and Prime Minister Churchill had in mind when they placed in their Atlantic Charter the goal of free access by all nations to the markets of the world.

The people of this country are gradually understanding better what foreign trade really is. You and I in our Propeller Club of the United States are helping to bring out the true nature of foreign trade, and to clear away the misunderstandings which cling to it.

I predict that after this war there will be such increased understanding of foreign trade that it will expand beyond any volume heretofore attained or anticipated. You will find yourselves engaged in one of the fastest growing professions—that of moving by water the goods of foreign trade. And more particularly, after this war, there will have been such an economic awakening among the hundreds of millions of people in China, in India, in the Dutch East Indies, and elsewhere in the Far East, that your own section of this country, the Pacific Coast, will be the center of the biggest trade growth of all.

The Propeller Club of San Francisco has the keenest interest in your welfare and your accomplishments. We have members of your Board of Trustees in our membership. We have met jointly with you. We have talked with you at the National Convention in October. We know you and we believe in you. I offer the heartiest good wishes and congratulations of The San Francisco Propeller Club members at this commencement time. We will watch your progress with friendly interest.

You have been catapulted into a position of great importance in the war life of your country. You have chosen a profession which in future peace years is going to occupy a more and more important part in the nation's economy and at the same time will make of you in a very real sense builders of world understanding, world civilization, and world peace. To have chosen that honorable profession, and to find yourselves ready to start in it at so critical a time, is to say that in very truth every one of you has had a personal rendezvous with destiny.

As you go out now, you will be like the psalmist of olden times, of whom we read: "He shall not be afraid of evil tidings; his heart is fixed."

The Port of Tacoma

January 21, 1942

Mr. Bern DeRochie
Pacific Marine Review
San Francisco, California

Dear Mr. DeRochie:

Am attaching hereto a copy of the minutes of the January meeting of the Propeller Club, Port of Tacoma, which was held last evening at the University-Union Club.

Sincerely,
Charles C. Cramp
Port of Tacoma.

The regular dinner and meeting of the Propeller Club, Port of Tacoma, was held on Tuesday evening, January 20th, at the University-Union Club.

A good crowd was on hand at 6:30 p.m. for the cocktail hour, after which a fine dinner was enjoyed. Immediately after the dinner, the speaker of the evening, Commander Raymond Farwell, USN, Seattle, was introduced to the Club. Commander Farwell gave an especially interesting talk and his subject was "Collisions at Sea," a matter on which he is an outstanding authority.

Following the main address, various guests were introduced to the assembled members. Alex Stewart, secretary of the Seattle Propeller Club, was among the visitors, and he gave a short talk.

George Osgood, manager of the Port of Tacoma, also spoke in connection with the use of docks in Tacoma by the Army and Navy.

The annual election of officers was next in order and the following were named to carry on for 1942:

President: Perry D. Moore, Foss Launch & Tug Co.

Vice President: K. M. Kennell, Shaffer Terminals, Inc.

Secretary: Charles C. Cramp, Shaffer Terminals, Inc.

Treasurer: Henry Dufour, Port of Tacoma.

Board of Governors—three-year term: John Schack, Seattle-Tacoma Shipbuilding Corp.; Hervey Petrich, Western Boatbuilding Co.

Board of Governors — two - year term: Phillip Spaulding, Seattle-Tacoma Shipbuilding Corp.

After the results of the polls were announced, ex-president Gil Ackerman spoke briefly and thanked the Board of Governors and others for their cooperation during the past year. He introduced the new president, Perry Moore, who spoke of the honor afforded him by being elected to the office of president and of what he hoped to accomplish during 1942.

Honorary President Tode's letter to Mr. Thacker denouncing the Pearl Harbor treachery is reproduced below by permission of the author.

Mr. Earl M. Thacker, President
Propeller Club, Port of Honolulu
Thacker Transportation Company
Honolulu, T. H.

Dear Mr. Thacker:

The attack by the Japanese Empire on Hawaii and other American possessions on December 7th was premeditated murder masked by a toothy smile! But the war has come as a great relief, like a reverse earthquake, that in one terrible jerk has shaken everything disjointed, distorted, askew, back into place. Those Japanese bombs have finally brought national unity to the United States.

Over the past three years it has been my pleasure to meet three times with the splendid membership of the Propeller Club of the United States, Port of Honolulu. Only a few weeks ago, as president of your Port, you appeared on the program of the Fifteenth Annual Convention of the Propeller Clubs and American Merchant Marine Conference in San Francisco, delivering your prophetic address: "What Hawaii Means to the Mainland U. S. A.!"

The membership of the Propeller Club of the United States in all Ports, together with all other Americans, grieve heavily for the casualties which have been reported from Hawaii. We know that the membership of your Club is giving every assistance to the relief of your suffering fellow-citizens. In our small way National Headquarters wishes to extend aid and there is enclosed our check No. 3670 in the sum of one hundred dollars to be expended by the Propeller Club, Port of Honolulu through whatever relief agency you decide.

Heads up and a dot dot dot dash.

Very sincerely,
Arthur M. Tode
Honorary President.

The Port of Los Angeles

On the slender thread of binder twine needed for American farms in 1900 hung the fate of the Philippines and the possible future of the entire Pacific area, according to Commander Richard R. Lukens, retired Coast and Geodetic Survey officer, who was the guest speaker at the monthly meeting of the Propeller Club, Port of Los Angeles, held at the Los Angeles Biltmore Hotel Tuesday, January 27, 1942.

Commander Lukens, who left Manila last April and who was succeeded by Commander Cowie, the latter being killed in an air raid on Manila in December, described the American action in the capture of the Philippines at the turn of the century which he said was incredibly easy. Not so easy, however, was subduing the Filipinos who believed that they were to have immediate independence after the war.

Just prior to the Paris peace conference which closed the Spanish-American war, Commander Lukens said there was considerable doubt in the United States as to the wisdom of retaining control over the islands. A visit to President McKinley by one of the Department of Agriculture officials who pointed out that the Philippines were an important source of binder twine was the clincher which settled the status of the islands.

Healthy growth of the Propeller Club was shown by the report of new members secured during the past month. The new members, all of whom were introduced and welcomed into the fast growing organization by third vice president James Adams, included Joseph H. Barry, Southern California representative for the Tubbs Cordage Company; William C. Winterhalter, branch manager, Owens Corning Fiberglass Corporation; Daniel C. Dobler, marine superintendent, Pacific Coast Division, the Texas Company; Morgan Adams, member of the Board of Harbor Commissioners; Roy Barto, general manager of the Cadwallader-Gibson Company; William A. St. Amant, assistant manager of W. R. Grace & Co., and Lieut.-Commander Roland D. Horne, inspector, U. S. Coast and Geodetic Survey.

PTA Dinner

The Pacific Traffic Association of San Francisco, Inc., staged a highly successful dinner at the Palace Hotel on January 27, in honor of Lieutenant Colonel E. C. R. Lasher, Chief of the Commercial Transport Branch, United States Army.

The Colonel flew to the West Coast from Washington Headquarters of the War Department for the purpose of addressing industrial, traffic and transportation men on a vital subject—The Effect of Military Transportation Requirements Upon the Nation's Industrial Structure and Transportation System.

In advance of the event Gordon Rowley, PTA president, announced "This great nation is now at war and tremendous strides are being made daily in furnishing the resources with which our armed forces can emerge victorious. All of us are asking what effect this will have on business, on transportation, on industry—on our private and civilian lives. Here is the answer, as expressed by a qualified observer, one whose entire military career has been devoted to the transportation of Army needs, in times of peace as well as in the field of action.

"Considerable effort is being expended by War Department officials in cooperation with the Pacific Traffic Association of San Francisco, Inc., to bring this message to the vitally concerned Central California area. This important subject warrants the support of your organization and its personnel. We further request that this announcement be publicized among your business associates."

PACIFIC TRAFFIC ASSOCIATION
OF SAN FRANCISCO, INC.
By GORDON ROWLEY, *President.*

New Firm Name

From the offices of Todd-California Shipbuilding Corp. of Richmond, we have received this announcement.

This is to announce that the name Todd-California Shipbuilding Corporation has been changed to "Todd-California Shipbuilding Division of The Permanente Metals Corporation."

There is absolutely no change in status of this Corporation other than this change in name.

JAMES F. McNAMARA

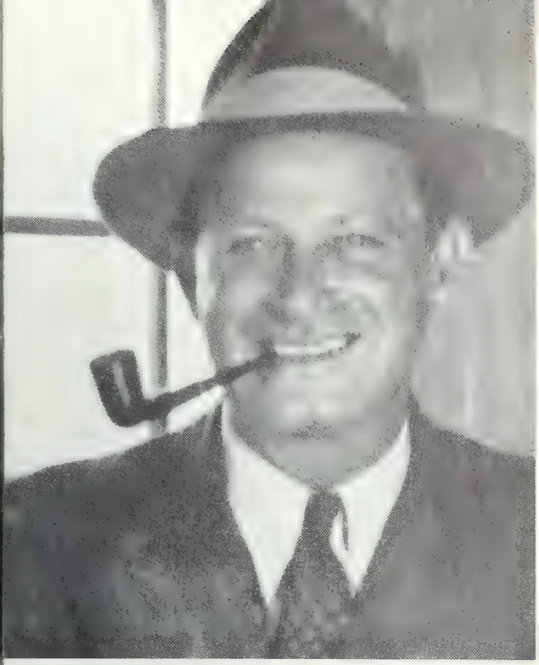
New Lukens Director

James F. McNamara of New York, mill products sales manager of The International Nickel Company, was elected a member of the board of directors of Lukens Steel Company at the company's annual meeting of stockholders, held January 13, it was announced by Robert W. Wolcott, president. Mr. McNamara is also a director of the Harvill Aircraft and Die Casting Company of Los Angeles.

Mr. McNamara joined the International Nickel Company as a salesman 31 years ago, later becoming vice president and general manager of the Monel Metal Products Corporation. In 1921 Mr. McNamara was made sales manager of all mill products for the company, in direct charge of finding and expanding new markets and establishing and developing the company's sales agencies.

Elected a director at the same meeting was Warren H. Snow, president of E. H. Rollins & Sons, Incorporated, of New York.

Bilgers—Ahoy!



JOHN R. EIDOM, President of THE BILGE CLUB

PRESIDENT JOHN R. EIDOM of The Bilge Club of Los Angeles Harbor announces that the Fourteenth Annual Bilge Club Banquet will be held on Saturday evening, February 14, at the Biltmore Hotel in Los Angeles. General Chairman Eidom states that "all members and guests are requested to report along with friends associated with maritime activities for dinner at seven-thirty for participation in the traditional festivities." There is to be a superb stage show.

This is one of the banner events of the maritime year in California and all indications point to a record-smashing attendance. Announcements have already been mailed to the members. Here are the committee heads:

CAPTAIN T. W. PETERS, Entertainment
JOHN E. MARSHALL, Attendance
JOSEPH W. COSTELLO, Decorations
RAY MITCHELL, Dinner
JAMES CRAIG, Refreshments
J. J. BUNTIN, Reception
L. H. CONNOR, Tickets and Reservations
E. J. McKEE, Finance and Program.

The Board of Directors of The Bilge Club wishes to emphasize that in formulating elaborate plans for this annual marine meeting it is maintaining a colorful tradition of 14 years' standing. Invitations have been extended to the various maritime organizations, the U. S. Navy and U. S. N. R., Coast Guard, U. S. Maritime Commission, all maritime Government officers, from San Francisco Bay to San Diego.

Announcing

. . . again the arrival of the good ship S/S BILGER, safely home with flags flying, for annual inspection at

THE FOURTEENTH ANNUAL BILGE CLUB BANQUET

to which

all members and guests are requested to report, along with friends associated with maritime activities,

on

Saturday Evening February 14, 1942 From 6:30 p.m. . . .

at

Biltmore Hotel Los Angeles

for

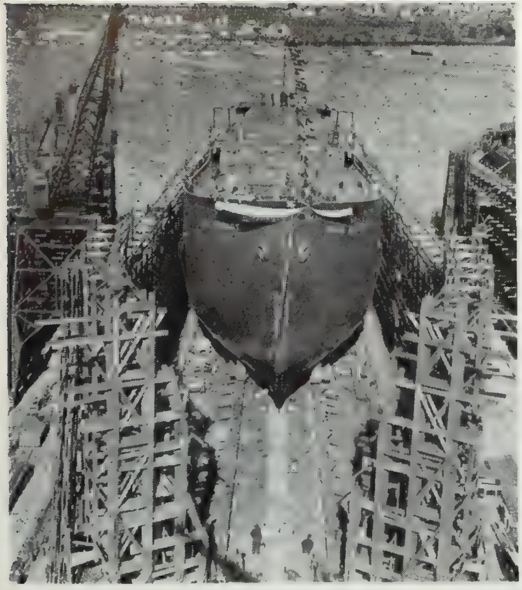
participation in the traditional festivities.

●

DINNER AT SEVEN-THIRTY
followed by
SUPERB STAGE SHOW
LIQUID REFRESHMENTS BEFORE AND AFTER.
FORMAL ATTIRE
ADMISSION $5.00

Make reservations immediately by returning enclosed card, together with check to L. H. Connor, Secretary, Catalina Terminal, Wilmington, Calif.

JOHN R. EIDOM
Master



PROGRESS IN *American Shipyards*

★ Asterisk indicates new listings.

Pacific Coast

ALBINA ENG. & MACHINE WORKS, Inc.
Portland, Oregon

New Construction:

Hulls Nos. 51-59, nine 165′ steel submarine chasers for U. S. Navy. **Six keels laid up to January, 1942. Launching date, No. 51, January, 1942.**

ANDERSON & CHRISTOFANI
San Francisco, Calif.

New Construction:

Six 97′ AMC coastal mine sweepers for U. S. Navy.

One 48′ yacht for Herman Hogrefe. **Completed.**

One 60′ purse seiner for S. Piazza.

ASSOCIATED SHIPBUILDERS
Seattle, Wash.

New Construction:

One insulated self-propelled lighter for delivery to U. S. Navy at Puget Sound Navy Yard. **Delivered.**

Four small seaplane tenders for delivery to Puget Sound Navy Yard.

Six wooden mine sweepers for delivery to U. S. Navy at Puget Sound Navy Yard.

★ **Eight steel mine sweepers** for U. S. Navy.

ASTORIA MARINE CONSTRUCTION CO.
Astoria, Ore.

New Construction:

Four 135′ wooden diesel-powered mine sweepers for U. S. Navy. Delivery in 14 months.

BASALT ROCK CO., INC.
Shipbuilding Yard—Napa, Calif.

New Construction:

Hulls Nos. 22-23, two 10,000-bbl. fuel oil tankers, for delivery to Mare Island Navy Yard. 235′ x 37′ x 19′3″; 1000-hp diesel electric; cost $1,800,000. Contract awarded by Navy Dept., Bureau of S. & A., Washington, D. C. Keel laying dates, No. 22, June 20, 1941; No. 23, August, 1941. Launching dates, No. 22, October, 1941; No. 23, December, 1941. **Delivery dates, No. 22, January 30;** No. 23, May 30, **1942.**

Hull No. 28, self-propelled lighter for U. S. Navy. 132′6″ x 30′ x 12′4″; 300-hp diesel; 500 gross tons; cost $370,000. **Delivery date, February 15, 1942.**

BERKELEY STEEL CONSTRUCTION CO.
Berkeley, California

New Construction:

One all-welded utility diesel-electric stern wheeler for U. S. Engineers. 102′ x 26′ x 5′. Cost $114,800.

BELLINGHAM M. R. & B. B. CO.
Bellingham, Wash.

New Construction:

Hulls Nos. 17-20, four mine sweepers for the U. S. Navy. Keel laying dates, No. 17, July 16; No. 18, July 22; No. 19, July 26; No. 20, July 31, 1941.

★ **Two hulls, 183′, salvage vessels** for U. S. Navy.

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Division—San Francisco Yard
San Francisco, Calif.

New Construction:

Hulls Nos. 5366-5367, two 1650-ton destroyers, DD459-DD460, for U. S. Navy. Keels laid January 13, 1941. Launching date, No. 5366, October 30; No. 5367, November 29, 1941.

Hulls Nos. 5368-5383, sixteen 2100-ton destroyers, DD526-DD541. Keel laid, No. 5368, November 29, 1941.

Hulls Nos. 5390-5396, seven 1620-ton destroyers, DD605 - DD611. Keel laying dates, Nos. 5390, 5391, March 25 and 28, 1941.

Hulls Nos. 5386-5389, four 6000-ton cruisers, CL95-CL98. Keel laying dates, No. 5386, July 13; No. 5387, August 1, 1941.

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Division—San Pedro, Calif.

New Construction:

Hulls Nos. 9001-9004, four 2100-ton destroyers, DD544-DD547.

Hulls Nos. 9007-9012, six 1620-ton destroyers, DD612-DD617. Keel laying dates, Nos. 9007, 9008, May 1, 1941; Nos. 9009, 9010, May 29, 1941.

BIRCHFIELD BOILER CO., INC.
Tacoma, Washington

New Construction:

One U. S. Coast Guard Cutter for Columbia River and Snake River. **Delivered.**

Hulls Nos. 432-437, six towboats, design V2-ME-A1, for U. S. Maritime Commission. Delivery dates, No. 432, March 6; No. 433, April 4; No. 454, May 5; No. 455, June 4; No. 456, July 4; No. 457, August 3, 1942.

CALIFORNIA SHIPBUILDING CORP.
Wilmington, California

New Construction:

Hulls Nos. 1-55, fifty-five EC-2 type cargo vessels for U. S. Maritime Commission. Fifteen keels laid up to January, 1942. **Launching dates,** No. 1, September 27: No. 2, October 26; No. 3, November 16; No. 4, December 3; No. 5, December 21, 1941; **No. 6, January 14, 1942.**

★ **One hundred nine EC-2 type cargo vessels** for U. S. Maritime Commission.

CAMPBELL MACHINE CO.
San Diego, Calif.

New Construction:

Hull No. 69, 450-ton fishing boat for A. Tavaras & Co., 110′x26′x12′; 350-hp Union diesel. Cost $170,000. Keel laid June 1, 1941. Launching date, October 25, 1941.

Hull No. 70, 550-ton fishing boat for G. Vattuone & Co. 128′x12′ 6″; 500-hp Union diesel. Cost $210,000. Keel laid June 15, 1941. **Launching date, January 31, 1942.**

COLBERG BOAT WORKS
Stockton, Calif.

New Construction:

Three large wooden mine sweepers for U. S. Navy.

One 39′6″ L. O. A. survey inspection boat for U. S. Army Corps of Engineers.

COMMERCIAL IRON WORKS
Portland, Ore.

New Construction:

Seven steel mine sweepers for U. S. Navy.

Four fleet tugs for U. S. Navy.

Four steel submarine chasers for U. S. Navy.

CONSOLIDATED STEEL CORP., LTD.
Los Angeles, Calif.

New Construction:

Hulls Nos. 157, Aguiprince; 158, Alcoa Pennant; 159, Alcoa Polaris; 222-251, 33 C-1-BT, full scantling, turbine propulsion cargo vessels for U. S. Maritime Commission. Keel laying dates, No. 159, April 7; No. 222, November 20; No. 223, November 25; No. 224, December 20; No. 225, December 29, 1941. Launching dates, No. 157, March 27; No. 158, June 26; No. 159, September 27, 1941; No. 222, March 30; No. 223, April 17; No. 224, May 4; No. 225, May 22, 1942. **Delivery dates,** No. 157, November 10; No. 158, December 8, 1941; **No. 159, January 15, 1942.**

Hulls Nos. 206, U. S. S. Doyen; 207, U. S. S. Feland; two design P1-S2-L2 twin-screw turbine propulsion transports for the U. S. Maritime Commission. Keel laying dates, No. 206, September 18; No. 207, November 10, 1941. **Launching dates, No. 206, February 18;** No. 207, June 17, 1942. Delivery dates, No. 206, June 29; No. 207, October 26, 1942.

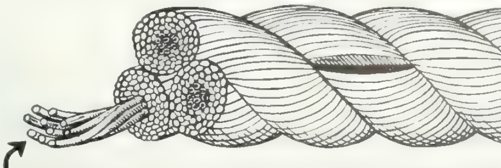
F. L. FULTON
Antioch, Calif.

New Construction:

Six 97′ wooden mine sweepers for U. S. Navy.

FITLER LUBRICORE

THE SELF-LUBRICATING PURE MANILA ROPE



CONTROLLED SELF-LUBRICATING GREEN YARN CENTER

IDENTIFIED BY THE BLUE AND YELLOW COLORED YARN TRADEMARK

FITLER TRADE MARK ESTABLISHED 1804

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SOLD BY DEALERS EVERYWHERE

It is common sense that where there are many fibres chaffing against each other friction will be generated unless a proper lubricant is applied at the right spot.

The right spot in a rope is the center yarns—it is at this point where Fitler Patented feature of lubrication permits the center yarns to glide easily upon each other. This exclusive feature with Fitler Lubricore Rope means much in reducing water absorption, thus allowing center yarns to dry out more quickly. BE THRIFTY—Insist on the Fitler Brand. Easily identified by the Blue & Yellow Trademark.

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Fig. 2698
Sizes 1/8" to 2"
600 lb sp
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Soundly designed for dependable operation in demanding shipboard service. Edward forged steel globe stop valve Fig. 2698 has for years been a marine favorite. Described in new Marine Valve Catalog No. 201.

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VALVE
& MFG. CO., INC.
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EDWARD
MARINE VALVES

STEEL STOP · CHECK · FEED-LINE · BLOW-OFF · NON-RETURN VALVES · ETC.

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ALL-WELDED SHIPS

Cargo liner, S. S. MORMACTIDE, built to ply between New York and South American ports. INGALLS ALL-WELDED SHIPS are stronger, lighter, faster—have larger cargo capacity and smaller operating cost.

THE
INGALLS
SHIPBUILDING CORPORATION

SHIPYARDS: PASCAGOULA, MISSISSIPPI—DECATUR, ALABAMA

OFFICES: BIRMINGHAM, ATLANTA, NEW YORK, NEW ORLEANS, PITTSBURGH

GEN. ENGINEERING & DRY DOCK CO.
Alameda, Calif.

New Construction:

Sixteen mine sweepers for U. S. Navy.

HARBOR BOAT BUILDING CO.
Terminal Island, Calif.

New Construction:

Hulls Nos. 117-120, four 136′ motor mine sweepers for U. S. Navy. Keels laid, No. 117, May 8, 1941; No. 118, May 12, 1941; No. 119, July 15, 1941; No. 120, August 23, 1941. **Launched**, No. 117, August 23; No. 118, October 27, 1941; **No. 119, January 31, 1942.**

★ **Hulls Nos. 143-148, six boats**, for U. S. Navy.

KAISER CO., INC.
Vancouver, Wash.

New Construction:

★ **Sixty-five EC-2 type cargo vessels** for U. S. Maritime Commission.

HUBBARD'S SOUTH COAST COMPANY
Newport Beach, California

New Construction:

Four 45′ twin-screw aircraft tenders for U. S. Navy.

Six 135′ mine sweepers for U. S. Navy.

KRUSE & BANKS SHIPBUILDING CO., INC.
North Bend, Oregon

New Construction:

Hulls Nos. 121-124, four 135′ wooden mine sweepers, YMS type, for U. S. Navy. Cost $1,800,000.

LAKE WASHINGTON SHIPYARDS
Houghton, Wash.

New Construction:

Four anti-submarine net tenders.

Four thousand A. S. N. T. floats.

Coast and Geodetic Survey ship.

Six seaplane tenders for U. S. Navy.

AL LARSON BOAT SHOP, INC.
Terminal Island, Calif.

New Construction:

Hulls Nos. 112-113, two mine sweepers, YMS 86 and YMS 87, for U. S. Navy. Keels laid, No. 112, June 20; No. 113, July 18, 1941. **Delivery dates, No. 112, February 10;** No. 113, April 10, 1942.

LOS ANGELES S. B. & D. D. CORP.
San Pedro, Calif.

New Construction:

Hulls Nos. AR6-AR8, three repair vessels for U. S. Navy.

Hulls Nos. AV 11-AV 13, three seaplane tenders for U. S. Navy.

MOORE DRY DOCK CO.
Oakland, Calif.

New Construction:

Hulls Nos. 201-203, three cargo and passenger vessels for U. S. Maritime Commission and Alcoa Steamship Co. 442′x62′x25′; depth molded to bridge deck 41′6″; 8500 hp; 17 knots speed; passenger carrying capacity 38. Keel laying dates, March 26, June 3 and August 6, 1941. Launching date, No. 201, October 21; No. 202, December 4; No. 203, December 30, 1941. Estimated delivery dates, June 1, July 1, and December 28, 1942.

Hulls Nos. 212-213, two submarine tenders, for U. S. Navy. Keels laid, No. 212, July 31; No. 213, September 15, 1941.

Hulls Nos. 207-211, five submarine rescue vessels for U. S. Navy. Keel laying dates, No. 207, September 15; Nos. 208-209, September 30; Nos. 210-211, October 15, 1941.

Hulls Nos. 214-219, six C-2 cargo vessels for U. S. Maritime Commission. Keel laying dates, No. 214, October 21; No. 215, December 4; No. 216, December 31, 1941.

Twelve C-2 cargo vessels.

OLSON & WINGE MARINE WORKS
Seattle, Wash.

New Construction:

Hulls Nos. 40-45, six 40′ motor sailers for U. S. Army. Keels laid, three, September 15, 1941.

Conversions:

Five for the U. S. Army. Total cost, $50,000.

OREGON SHIPBUILDING CORP.
Portland, Oregon

New Construction:

Hulls Nos. 170-200 and 229-240, forty-three EC-2 type cargo vessels for U. S. Maritime Commission. Keel laying dates, No. 170 and No. 171, May 19; No. 172 and No. 173, May 31; No. 174, July 11; No. 175, No. 176 and No. 177, July 18; No. 178, September 18; No. 179 and No. 180, September 20; No. 181, September 30; No. 182, October 21; No. 183; October 26; No. 184, November 11; No. 185, November 26; No. 186, December 9; No. 187, December 16; No. 188, December 22, 1941. Launching dates, No. 171, September 27; No. 170, October 19; No. 172, October 26; No. 173, November 16; No. 174, November 23; No. 175, December 7; No. 176, December 14; No. 177, December 21; No. 180, December 28, 1941. **Delivery date, No. 171, December 31, 1941.**

★ **Eighty-eight EC-2 type cargo vessels** for U. S. Maritime Commission.

PACIFIC BRIDGE CO.
San Francisco, Calif.

New Construction:

One seagoing drydock for U. S. Navy. Cost $1,649,000.

PACIFIC DRY DOCK & REPAIR CO.
Oakland, Calif.

New Construction:

One all-welded steel oil barge. 148′ x 38′ x 9′; 300,000 gal. capacity.

Lighters. Cost $284,572.

PERMANENTE SHIPBUILDING CORP.
Richmond, Calif.

New Construction:

★ **Fifteen C-4 type cargo vessels** for U. S. Maritime Commission.

RICHMOND SHIPBUILDING CORP.
Richmond, Calif.

New Construction:

Hulls Nos. 41-64, twenty-four EC-2 type cargo vessels for U. S. Maritime Commission **Keel laying dates,** No. 41, No. 42 and No. 43, September 17; Nos. 44 and 45, October 6; No. 46, October 8, 1941.

SAN DIEGO MARINE CONST. CO.
San Diego, Calif.

New Construction:

Four large wooden mine sweepers for U. S. Navy.

One 87′ wooden tug boat.

One 64′ wooden passenger ferryboat.

Conversion:

★ **One 185′ yacht,** converted to patrol vessel.

★ **One 210′ steam schooner,** converted to salvage ship.

SEATTLE S. B. & D. D. CO.
Seattle, Wash.

New Construction:

Four 136′ mine sweepers for U. S. Navy.

SEATTLE-TACOMA SHIPBUILDING CORP.—PLANT No. 1
Tacoma, Wash.

New Construction:

Hulls No. 6, Frederick Funston; No. 7, James O'Hara, two C-3 shelter deck type cargo steamers for U. S. Maritime Commission. To be converted on completion to U. S. Army troopships. Keel laying dates, April 21 and June 16, 1941. Launching dates, September 27 and December 30, 1941.

Hulls Nos. 8-11, four C-3 cargo ships for U. S. Maritime Commission. 492′ x 69′6″ x 42′6″ (molded); 8900 tons; 8500-hp steam turbine propulsion; cost $2,990,000. **Keel laying dates,** No. 8, June 18; No. 9, October 1; No. 10, October 27, 1941; **No. 11, January 2, 1942. Launching dates,** No. 8, October 21, 1941; **No. 9, January 15; No. 10, February 21;** No. 11, May 1, 1942. Delivery dates, No. 8, April; No. 9, April; No. 10, May; No. 11, June, 1942.

Hulls Nos. 12, Patapsco; 13, Rappahannock; 14, Rio Grande; 15, Wabash; 16, Susquehanna; five TI-MT-MI tankers for U. S. Navy. 310′9″ x 48′6″ x 19′9′. Keel laying dates, No. 12, May 18; No. 13, May 18; No. 14, May 10; No. 15, July 20; No. 16, August 3, 1942. Launching dates, No. 12, May 8; No. 13, July 18; No. 14, August 1; No. 15, October 3; No. 16, October 18, 1942. Delivery dates, No. 12, September 2; No. 13, October 28; No. 14, November 1, 1942; No. 15, January 15; No. 16, February 1, 1943.

Hulls Nos. 17-46, thirty C-3 cargo vessels for U. S. Maritime Commission. 492′ x 69′6″ x 42′6″; 8900 tons; 8500-hp steam turbine propulsion. Keel laid, No. 17, November 3; No. 18, November 27, 1941. Delivery date, No. 17, May 18, 1942.

SEATTLE PLANT

New Construction:

Twenty-five destroyers for U. S. Navy.

THE SHAIN MANUFACTURING CO.
Seattle, Washington

New Construction:

One model 49 trimmer ship, express cruiser, for Superior Packing Co., Alaska.

One 50′ commodore model trimmer ship for E. Ramey.

One 38′ sedan trimmer ship for U. S. Customs. **Delivered.**

Two 50′ trimmer ships for U. S. Coast Guard. 12½′ beam; twin Chrysler Royals; 16 mph.

One 50′ trimmer ship for Dr. Chas. Ward. 12½′ beam; 165-hp Gray diesel; 16 mph.

STEPHENS BROS.
Stockton, Calif.

New Construction:

Three large wooden mine sweepers for U. S. Navy.

TODD-CALIFORNIA SHIPBUILDING CORP.
Richmond, Calif.

New Construction:

Thirty cargo vessels for British Purchasing Commission. 10,000 dwt; 416′ long, 57′ beam. Cost $50,000,000. First vessel, Ocean Vanguard, launched August 16, 1941.

★ **One hundred twenty-five EC-2 type cargo vessels** for U. S. Maritime Commission.

TODD-SEATTLE DRY DOCKS
Seattle, Wash.

Conversion work.

UNITED ENGINEERING CO., LTD.
San Francisco, Calif.

New Construction:

Hulls Nos. 17-20, four 205′ Navy fleet tugboats, for U. S. Navy.

Hulls Nos. 21-24, four 205′ Navy fleet tugboats, for U. S. Navy.

WESTERN BOAT BUILDING CO., INC.
Tacoma, Wash.

New Construction:

Hulls Nos. 147-148, two U. S. Minesweepers, Y.M.S. 133-Y.M.S. 134. Keel laying dates, No. 147, June 23, 1941; No. 148, August 12, 1941. **Launching dates,** No. 147, De-

More and More Liberty Ships for Uncle Sam
More and More Big Engine Nuts by "Nephew Milton"

Liberty Vessels Are Now Going Into Cargo Service and Milton Large Nuts Will Keep Their Engines Throbbing

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A Round Dozen Different Sizes . . . Inside Diameters 2¾" to 5"
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BENDIX AVIATION CORPORATION
MARINE DIVISION

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BENDIX AVIATION CORPORATION
MARINE DIVISION
754 Lexington Avenue Brooklyn, New York

cember 18, 1941; **No. 148, February 15, 1942.**

Hull No. 149, fishing boat for stock; 95′ x 26′.

Conversion:

★ **Western Queen to YP,** for U. S. Navy.

★ **St. Francis to mine sweeper** for U. S. Navy.

WESTERN PIPE AND STEEL CO.

South San Francisco, Calif.

New Construction:

Hulls Nos. 62-65, 77-95, twenty-three C-3 cargo ships for U. S. Maritime Commission. 492′ x 69′ x 42′6″; 8900 tons; 8500-hp; steam propulsion; $2,990,000 each. Keel laying dates, No. 62, April 17; No. 63, May 29; No. 64, July 17; No. 65, September 30, 1941. Launching dates, No. 62, September 27, 1941.

WILLAMETTE IRON & STEEL CORP.

Portland, Ore.

New Construction:

Two minelayers, CM6, U. S. S. Catskill, and CM7, U. S. S. Ozark, for U. S. Navy.

Conversion:

U. S. S. President Jackson for U. S. Navy.

Atlantic, Lakes, Rivers

ALABAMA DRY DOCK & SHIPBUILDING CO.

Mobile, Ala.

New Construction:

Hulls Nos. 228-229, two tugs for Mobile Towing & Wrecking Co.

Hull No. 230, tug, for stock.

Hulls Nos. 231-243, thirteen all-welded Emergency cargo vessels for U. S. Maritime Commission. Cost $19,500,000.

Hull No. 244, 18,000-ton floating dock, for Todd Shipyards Corp., Galveston.

★ **Twenty-eight EC-2 type cargo vessels** for U. S. Maritime Commission.

LESTER F. ALEXANDER CO.

New Orleans, La.

New Construction:

Three A-400 type steel barges for stock. 32′ x 120′ x 8′.

One steel tug for stock. 120-hp.

One steel tug, South Wind, for U. S. Navy Department.

AMERICAN BRIDGE COMPANY

Pittsburgh, Pa.

New Construction:

Eight dump scows. 160′ x 50′6″ x 13′6″; for Panama Canal.

Ten coal barges for stock. 175′ x 26′ x 11′.

Sixteen sand barges for the Panama Canal. 160′ x 50′6″ x 13′6″.

Sixty coal barges for Carnegie-Illinois Steel Corp. 175′x26′x11′.

Fifteen barges for Pennsylvania Railroad Co. 80′ x 30′ x 9′3″.

Ten barges for Pennsylvania Railroad Co. 80′ x 30′ x 9′.

AMERICAN CAR & FOUNDRY CO.

Wilmington, Delaware

New Construction:

Four 135′ mine sweepers for Navy Dept., Bureau of Supplies and Accounts. Total cost $1,340,000.

THE AMERICAN SHIP BUILDING CO.

Cleveland, Ohio

New Construction:

Eight mine sweepers (4 at Lorain, Ohio; 4 at Cleveland, Ohio) for U. S. Navy; 220′ O.A. x 32′ x 17′; diesel-electric propulsion; contract price, $13,736,000.

Fifteen 2500-ihp, three cylinder triple expansion engines for Maritime Commission design EC2-S-C1 cargo vessels.

Two bulk freighters for Pittsburgh Steamship Co. 614′ x 67′ x 35′; turbo-electric propulsion.

★ **Six bulk freighters** for U. S. Maritime Commission. 620′-590′ x 60′ x 35′.

BATH IRON WORKS

Bath, Maine

New Construction:

Hull No. 187, cargo ship for American Export Lines. 400′ x 60′ x 39′. **Delivery date, January, 1942.**

Hull No. 189, DD458, destroyer, for U. S. Navy. **Delivery date, January, 1942.**

Hulls Nos. 190-195, DD449-451, 467-469, six destroyers for U. S. Navy.

Hulls Nos. 196-206, DD507-DD517, eleven destroyers for U. S. Navy.

Hulls Nos. 208-213; DD629-DD631; DD 642-DD644; six destroyers for U. S. Navy.

BETHLEHEM STEEL COMPANY

Shipbuilding Division—Fairfield Yard

Baltimore, Md.

New Construction:

Hulls Nos. 2001-2062, sixty-two EC-2 type cargo vessels, for U. S. Maritime Commission. Keel laying dates, No. 2001, March 30; No. 2002, May 15; No. 2003, June 21; No. 2004, June 21; No. 2005, July 15; No. 2006, July 15; No. 2007, August 15; No. 2008, August 25; No. 2009, September 3; No. 2010, September 12; No. 2011, September 22; No. 2012, September 27; No. 2013, October 13; No. 2014, October 20; No. 2015, October 29; No. 2051, November 5; No. 2016, November 19; Nos. 2017-2018, December 10; Nos. 2052-2053, December 13, 1941; **Nos. 2019-2020, January 6, 1942.** Launching dates, No. 2001, September 27; No. 2002, October 25; No. 2003, November 15; Nos. 2004-2005, December 6; Nos. 2006-2007, December 30, 1941. **Delivery date, No. 2001, December 30, 1941.**

BETHLEHEM STEEL COMPANY, INC.

Shipbuilding Division—Fore River Yard

Quincy, Mass.

New Construction:

Hull No. 1478, Massachusetts, 35,000-ton battleship for U. S. Navy. Keel laid July 20, 1939. Launched September 23, 1941.

Hulls Nos. 1479, San Diego; and 1480, San Juan; two 6000-ton cruisers for U. S. Navy. Keels laid March 27 and May 15, 1940. Launching date, No. 1479, July 26; No. 1480, September 6, 1941. **Delivery date, No. 1479, January 10, 1942.**

Hull No. 1484, cargo vessel for U. S. Maritime Commission. 450′ x 66′ x 42′3″; 16½ knots; geared turbines and water tube boilers; 14,500 tons. Launching date November 16, 1940.

Hulls Nos. 1490-1491, two tankers for Sinclair Refining Co., 10,700 tons dwt. **Keel laid,** No. 1490, May 31; No. 1491, September 29. Launching dates, No. 1490, September 27; No. 1491, December 13, 1941. **Delivery dates, No. 1490, November 7, 1941; No. 1491, January 6, 1942.**

Hulls Nos. 1492-1493, two tankers for Sinclair Refining Co. 15,450 tons dwt. Keel laying date, No. 1492, August 9; **No. 1493, December 6, 1941. Launching date, No. 1492, December 6, 1941.**

Hulls Nos. 1494-1497, four heavy cruisers for U. S. Navy. Keel laying dates, No. 1494, May 26; No. 1495, June 30; No. 1496, September 3; No. 1497, October 9, 1941.

Hulls Nos. 1498-1501, four light cruisers for U. S. Navy. Keel laid, No. 1498, September 23, 1941.

Hulls Nos. 1502-1503, two light cruisers for U. S. Navy.

Hulls Nos. 1504-1507, four heavy cruisers for U. S. Navy.

Hulls Nos. 1508-1511, four aircraft carriers for U. S. Navy. Keel laying date, No. 1508, July 15; No. 1509, September 15, 1941.

Hull No. 1515, trawler. Keel laid July 12, 1941. Launched, November 4, 1941. **Delivered, November 26, 1941.**

Hulls Nos. 1516-1519, four 1650-ton destroyers for U. S. Navy. Keel laying date, No. 1516, May 1; No. 1517, May 20, 1941.

Hulls Nos. 1520-1521, two 1620-ton destroyers for U. S. Navy. (Transferred from Bethlehem San Pedro yard.)

BETHLEHEM STEEL COMPANY, INC.

Shipbuilding Div.—Sparrows Point Yard

Sparrows Point, Md.

New Construction:

Hull No. 4348, C-1 cargo vessel. LOA 416′, LBP 395′, beam 60′, depth 37′6″. Keel laid March 13, 1941.

Hulls Nos. 4351-4352, two cargo vessels for Seas Shipping Co. 450′ x 66′ x 34′; 6300 hp; 8500 gross tons. Keel laying dates, No. 4351, December 12, 1940; No. 4352, January 22, 1941. Launching date, No. 4351, July 26, No. 4352, August 29, 1941.

Hulls Nos. 4354-4356, three oil tankers for Socony Vacuum Oil Co. 487′6″ x 68′ x 37′; 12,000 hp, 9800 gross tons. Keel laying dates, No. 4354, September 16, 1940; No. 4355, April 23; No. 4356, July 8, 1941. Launching date, No. 4354, July 1, 1941.

Hulls Nos. 4358-4359, two oil tankers for Socony Vacuum Oil Co. 487′6″ x 68′ x 37′; 12,000 hp; 9800 gross tons. Keel laid, No. 4358, August 1, 1941.

Hulls Nos. 4360-4361, two oil tankers for Union Oil Co. 442′ x 64′ x 34′10″; 3500 hp; 8000 gross tons. Keel laying date, No. 4360, June 18, 1941.

Hulls Nos. 4362-4364, three cargo and passenger vessels for Mississippi Shipping Co. 465′ x 65′6″ x 39′9″; 7800 hp; 8300 gross tons. Keel laid, No. 4362, September 4, 1941.

Hull No. 4365, oil tanker for Richfield Oil Co. 442′ x 64′ x 34′10″; 3500 hp; 8000 gross tons. Keel laid May 21, 1941.

Hulls Nos. 4367-4368, two oil tankers for Panama Transport Co. 487′6″ x 68′ x 37′; 7000 hp; 9800 gross tons.

Hull No. 4369, oil tanker for Continental Oil Co. 442′ x 64′ x 34′10″; 3500 hp; 8000 gross tons.

Hulls Nos. 4371-4372, two oil tankers for Gulf Oil Co. 442′ x 64′ x 34′10″.

Hull No. 4373, tanker for Panama Transport Co. 487′6″ x 68′ x 37′; 7000 hp; 9800 gross tons.

Hulls Nos. 4374-4375, two tankers for Union Oil Co. of Calif. 487′6″ x 68′ x 37′; 7000 hp; 9800 gross tons.

Hulls Nos. 4376-4377, two tankers for Socony Vacuum Oil Co. 487′6″ x 68′ x 37′; 4800 hp; 9800 gross tons.

BETHLEHEM STEEL COMPANY, INC.

Shipbuilding Div.—Staten Island Yard

Staten Island, N. Y.

New Construction:

Hulls Nos. 8021-8022, two destroyers for U. S. Navy.

Hulls Nos. 8023-8029; 8033-8035; ten destroyers for U. S. Navy.

BURGER BOAT CO.

Manitowoc, Wisconsin

New Construction:

One ferryboat, 110′ x 32′ x 8′, 330-hp Gray diesel engine.

Six 135′ wooden motor mine sweepers for U. S. Navy.

Two 110′ subchasers.

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GENUINE WHITE OAK IS AVAILABLE
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We have ample stocks reserved NOW for all Government boats.
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Are of all steel construction, light weight, small in size, cleanable and many installations have proved them to be most satisfactory. They are approved for marine service and at the present time early shipments can be made.

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INCORPORATED
Combustion Engineers

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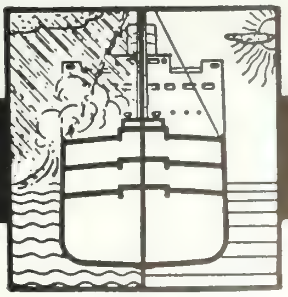

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HEAD OFFICE - 525 CENTRAL BUILDING, SEATTLE, WASH.
NEW YORK OFFICE - 75 WEST ST., NEW YORK, N. Y.

IRA S. BUSHEY & SONS, INC.
Brooklyn, N. Y.

New Construction:

Hull No. 498, 156-foot oil tanker. Delivery date, April, 1942.

Hull No. 499, 156-foot oil tanker. Delivery date, September, 1942.

Hulls Nos. 503-504, two 100' steel tugs, for U. S. Maritime Commission. 805-hp.

Hulls Nos. 505-506, two drydocks, for U. S. Navy.

Hulls Nos. 507-509, three 100' steel tugs, for U. S. Navy. 805 hp.

Hulls Nos. 511-513, three 100' steel tugs, for Maritime Commission. 805-hp.

★ **Hull No. 514, deck scow (wood),** for A. J. Harper, Baltimore, Md. 117' x 36' x 10'.

★ **Hulls Nos. 515-516, two 100' steel tugs.**

★ **Hull No. 517, 12,000-ton, sectional drydock** for U. S. Navy.

CALUMET SHIPYARD & DRY DOCK CO.
Chicago, Illinois

New Construction:

Hull No. 126, all-welded steel towboat for Ashland Oil Refining Co., 145' x 32' x 9', 1600-hp diesel. **Delivered.**

Hulls Nos. 131-132, two oil barges, standard river type, for Ashland Oil & Refining Co. 195' x 35' x 10'.

Hulls Nos. 133-135, 142-143, two three-barge units for Ashland Oil & Refining Co. Each unit, 195' x 35' x 10'; center section square on both ends; both end sections square on one end, raked on opposite end.

Hull No. 136, one river towboat for Ashland Oil & Refining Co. 145' x 32' x 9'. 1600-hp diesel.

Hulls Nos. 137-141, five tugs for U. S. Maritime Commission. 1050-hp.

CHARLESTON S. B. & D. D. CO.
Charleston, South Carolina

New Construction:

Eight 205' mine sweeping fleet tugs. Delivery for all by September, 1943.

CONSOLIDATED SHIPBUILDING CORP.
Morris Heights, N. Y.

New Construction:

Eleven 165' steel submarine chasers for U. S. Navy.

CONSOLIDATED STEEL CORP. OF TEXAS
Orange, Texas

New Construction:

Three transportation barges for Shell Oil Co., Inc. 40' x 16' x4'6".

CRAMP SHIPBUILDING COMPANY
Philadelphia, Pa.

New Construction:

Six cruisers, Cleveland class, for U. S. Navy.

Submarines, four floating workshops and seagoing tugs, for U. S. Navy.

DEFOE BOAT & MOTOR WORKS
Bay City, Mich.

New Construction:

Hulls Nos. 171-174, four mine sweepers for U. S. Navy, 220' long.

Hulls Nos. 175-186, twelve 174' escort vessels, for U. S. Navy. **Delivered, Hulls Nos. 175-180.**

Hulls Nos. 187-194, eight 174' sub-chasers for U. S. Navy.

Hulls Nos. 195-198, four 145' tugs for U. S. Navy.

Hulls Nos. 199-204, five subchasers for U. S. Navy.

DELTA SHIPBUILDING CORP.
New Orleans, Louisiana

New Construction:

Twenty-five EC-2 Emergency type vessels for U. S. Maritime Commission. 416' x 56'10¾" x 37'4"; 2500-hp triple expansion engine.

★ **Twenty-eight EC-2 Emergency type vessels,** for U. S. Maritime Commission.

THE DRAVO CORPORATION
Engineering Works Division
Pittsburgh, Pa., and Wilmington, Del.

New Construction:

Hulls Nos. 1838-1839, two 165' type PC submarine chasers for U. S. Navy, Washington, D. C. 670 gross tons.

Hull No. 1877, floating caisson gate, for U. S. Navy, Philadelphia Navy Yard; 1165 gross tons.

Hull No. 1903, floating caisson gate for U. S. Navy, Norfolk Navy Yard; 1330 gross tons.

Hulls Nos. 1907-1911, five 165' type AM mine sweepers for Bureau Supplies & Accounts, U. S. Navy Dept., Washington, D. C.; 1675 gross tons.

Hulls Nos. 1912-1916, five 165' type PC submarine chasers for Bureau of Supplies & Accounts, U. S. Navy Dept., Washington, D. C.; 1675 gross tons.

Hulls Nos. 1928-1933, six welded steel deck barges for Delaware, Lackawanna & Western R. R., New York City. 100' x 30' x 9'6"; 1392 gross tons.

Hulls Nos. 1950-1955, six W-7 welded steel coal barges for Hillman Coal & Coke Co., New Orleans, La. 195' x 35' x 9'9"; 1794 gross tons.

Hull No. 1956, 25-ton floating crane for Charleston, S. C. Navy Dept., Washington, D. C.; 335 gross tons.

Hulls Nos. 1967, 1971-1972, three welded oil barges; No. 1967, for Standard Oil Co. of California; No. 1971, for California Transportation Co.; No. 1972, for Canal Barge Co., New Orleans, La. 195' x 35' x 9'9"; 1794 gross tons.

Hulls Nos. 1973-1976, four welded sand and gravel barges for Keystone Sand Div. 135' x 27' x 8'; 1020 gross tons.

Hulls Nos. 1977-1986, ten type W-7 welded bulk cargo barges for Pittsburgh Coke & Iron. 175' x 26' x 11'; 4720 gross tons.

Hulls Nos. 1987-1992, six welded oil barges; No. 1987, for Canal Barge Co., New Orleans, La.; Nos. 1988-1992, for Cornelius Kroll, Houston, Texas. 195' x 35' x 9'9"; 3588 gross tons.

Hulls Nos. 1997-2009, thirteen covered lighters for Bureau of Supplies and Accounts, Navy Dept. 6760 gross tons.

Hulls Nos. 2010-2011, two welded side-dump scows for Bureau S. & A., Navy Dept., Washington, D. C. 115' x 28' x 7'6"; 240 gross tons.

Hulls Nos. 2012-2021, ten welded steel car floats, for Pennsylvania R. R., Philadelphia, Pa. 250' x 34' x 9'1"; 5940 gross tons.

Hulls Nos. 2022-2030, nine welded deck barges, for Erie R. R. 100' x 30' x 9'6"; 2088 gross tons.

Hull No. 2031, welded steel car float for Erie R. R. 250' x 34' x 9'1"; 594 gross tons.

Hulls Nos. 2032-2041, ten type W-7 welded coal barges for Weirton Steel Co. 175' x 26' x 11'; 4720 gross tons.

Hull No. 2042, caisson, for drydock for Bayonne Associates, Bayonne, N. J. 1330 gross tons.

Hulls Nos. 2043-2058, sixteen welded steel coal barges for Wheeling Steel Corporation. 10' x 26' x 10'8"; 9040 gross tons.

Hull No. 2059, welded cargo box barge, for Lone Star Cement Co., New York City. 180' x 40' x 9'6"; 607 gross tons.

Hull No. 2060, caisson, for drydock No. 2 at Charleston Navy Yard. 375 gross tons.

Hull No. 2061, caisson, for drydock No. 1 at Charleston Navy Yard. 520 gross tons.

Hulls Nos. 2062-2065, four 165' submarine chasers, for Bureau of Ships, Navy Department, Washington, D. C. 1340 gross tons.

Hulls Nos. 2066-2073, one floating steel drydock (consisting of 8 segmental pontoons; 2 at 390 tons, 6 at 1470 tons), for Maryland Dry Dock Co. 9600 gross tons.

Hulls Nos. 2074-2077, four welded steel oil barges for Canal Barge Co., New Orleans, La. 195' x 35' x 9'9".

ELECTRIC BOAT COMPANY
Groton, Conn.

New Construction:

Two submarines, SS206, Grampus; SS208, Grayback; for U. S. Navy. Cost $2,937,000 each. Keels laid, Grampus, February 4, 1940; Grayback, April 3, 1940.

One submarine, SS204, Mackeral, for U.S. Navy. Keel laid October 6, 1939. Launched September 28, 1940.

Three submarines, SS212, Gato; SS213, Greenling; SS214, Grouper; for U. S. Navy. Cost $2,957,000. Keels laid, Gato, October 5, 1940; Greenling, November 12, 1940.

Thirteen submarines, SS215, Growler; SS216, Grunion; SS217, Guardfish; SS218, Albacore; SS219, Amberjack; SS220, Barb; SS221, Blackfish; SS222, Bluefish; SS223, Bonefish; SS224, Cod; SS225, Cero; SS226, Corvina; SS227, Darter. Cost $2,795,000 each.

Twenty-five submarines, SS240-SS264.

THE FEDERAL SHIPBUILDING AND DRY DOCK COMPANY
Kearny, N. J.

New Construction:

Hulls Nos. 168-169, CL51, Atlanta; and CL52, Juneau; two 6000-ton cruisers for U. S. Navy. Keels laid April 22 and May 27, 1940. Launching date, No. 168, September 6; No. 169, October 25, 1941.

Hulls Nos. 181-186, six C-2 cargo ships for U. S. Maritime Commission. Keel laid, No. 181, June 5; No. 182, October 2; No. 183, October 25; No. 184, November 17; No. 185, December 9, 1941. **Launching date,** No. 181, November 12, 1941.

Hulls Nos. 192-193, two tankers for Sinclair Refining Co. 15,450 dwt. Keel laid, No. 193, July 21, 1941. Launching date, No. 192, December 6, 1941.

Hulls Nos. 196-197, two destroyers for U. S. Navy. Keels laid, Nos. 196-197, December 16, 1940. Launching date, No. 196, September 26, 1941.

Hulls Nos. 198-203, six destroyers for U. S. Navy. Keels laid, Nos. 198-199, October 2; Nos. 200-201, November 27, 1941.

Hulls Nos. 204-205, two destroyers for U. S. Navy.

Hulls Nos. 206-213, eight destroyers for U. S. Navy. Keels laid, No. 206 and 207, February 11; No. 208 and 209, July 31; Nos. 210-211, September 15; Nos. 212-213, November 3, 1941.

Hulls Nos. 214-218, five destroyers for U. S. Navy.

Hulls Nos. 219-221, three cruisers for U. S. Navy.

Hulls Nos. 222-227, six destroyers for U. S. Navy.

Hulls Nos. 229-232, four destroyers for U. S. Navy.

Hulls Nos. 233-240, eight C-2 cargo ships for the U. S. Maritime Commission.

Hulls Nos. 241-264, twenty-four C-2 cargo vessels for U. S. Maritime Commission.

GREAT LAKES ENGINEERING WORKS
River Rouge, Michigan

New Construction:

Hulls Nos. 287-289, three bulk freighters for Pittsburgh S. S. Co. 640' x 67' x 35'; 18,000 dwt; 4000-hp steam turbine engines.

Record Movements of Iron Ore, Coal and Limestone

To meet the unprecedented requirements of the American war program, United States Steel Corporation Subsidiaries have established a series of all-time records in the production and movement of iron ore, and in the shipment of limestone and coal during the 1941 season.

The Oliver Iron Mining Company of Duluth, Minnesota, last year produced a record iron ore tonnage of 34,127,982 net tons, compared with 26,193,055 net tons in 1940. Of this amount the vessels of Pittsburgh Steamship Company, United States Steel's Great Lakes subsidiary, brought to lower lake ports 23,542,751 gross tons of iron ore. In addition to this the Pittsburgh ships and other subsidiary vessels carried 7,418,607 tons of limestone and coal. These records were established between the period of April 4, 1941, when the first vessels left their winter berths, and December 12, 1941, when they closed their season.

The Pittsburgh Steamship Company's iron ore tonnage record compares with a movement of 18,713,382 gross tons in 1940 and exceeds the previous record year of 1916 by 3,900,222 gross tons. Of the total iron ore moved during the 1941 season on the Great Lakes (80,116,360 gross tons), the Pittsburgh Steamship Company alone was responsible for approximately thirty per cent.

To provide for a still greater movement in 1942, the Pittsburgh Steamship Company now has under construction five vessels which will be placed in operation some time during the 1942 season.

Turbine Plant's Shipments Gain 60%

R. A. McCarthy, vice president in charge of the Westinghouse Steam Division, disclosed recently that deliveries from the company's South Philadelphia plant totaled $21,300,000 in the first nine months of 1941.

This represents an increase of more than 60 per cent over deliveries in the same period of 1940, Mr. McCarthy continued, when $13,100,000 worth of steam turbines, gears and auxiliary apparatus was shipped.

At work on propulsion machinery for Navy fighting ships, cargo vessels and equipment for power plants and industry, the Steam Division had a backlog of orders valued at $148,000,000 on October 1. The backlog on October 1, 1940, was $67,000,000.

Shipments will continue to rise as more manufacturing facilities in the plant are put in operation. Some 6600 persons are employed in the South Philadelphia works, nearly 60 per cent more than the number on October 1, 1940. Additional men are being trained in the plant to operate machine tools.

The Steam Division is manufacturing propulsion machinery and other equipment for more than 100 Navy fighting ships and for 80 merchant vessels.

Reimbursement for War Loss of Seamen Effects

The Maritime War Emergency Board announced on January 22 that it has established the amount and conditions under which officers and seamen of the United States merchant marine will be reimbursed for the loss of personal effects resulting from war operations.

The Board's decision, applicable to both licensed and unlicensed personnel employed on United States flag vessels, is retroactive to and including December 7, 1941, date of the attack on Pearl Harbor.

Reimbursement for the loss of personal effects will range from $150 to $300, depending upon the grade or rank held by the individual. Provision has been made, however, for payments in excess of the basic amounts if a greater personal loss is definitely established.

The scale for reimbursement is as follows: for a licensed officer, $300; for an unlicensed member of the crew receiving a wage in excess of $120 per month, $250; and for an unlicensed crew member receiving less than $120 per month, $150.

In the event an officer establishes the value of his personal effects lost or damaged as exceeding the basic reimbursing amounts, he may be paid an amount up to $500. If he is an unlicensed seaman receiving a monthly wage of $120 or more, he may be paid up to $350, and if the seaman is receiving a monthly wage less than $120 he may be paid up to $250, in the event of loss.

To claim "actual" loss the officer or crew member must have, at the beginning of the voyage, deposited an itemized list of his personal effects with the ship's master.

Seamans Life Insurance

The Maritime Commission in response to hundreds of inquiries for information regarding the $5,000 life insurance policy coverage for American seamen is governed by the following limitations and exceptions:

The insurance covers only crews of merchant ships documented under the laws of the United States and covered by the statement of principles adopted by the maritime conference.

The insurance is effective throughout the entire voyage and until the crew members are landed at a place within Continental United States, including Alaska.

Exceptions are made for voyages exclusively on inland waters of the United States, or on waters of the Gulf of Mexico, which "include harbors of Key West and Havana and all waters west of the line from the easternmost point of Key West to the easternmost point of Havana."

Hot Off the Press

Micromax CO_2 Recording Equipment. Catalog N-91-163, published by Leeds & Northrup Company, Philadelphia, Pa.

Recent improvements in Micromax CO_2 recording equipment are described in this revised catalog issued by Leeds & Northrup Company. Heavy-walled glass tubing in shock-absorber mountings now brings the continuously flowing flue-gas sample from primary filter to cell assembly.

Three-way cocks for check purposes and condensate drain, previously of metal and external to the cabinet, are now of glass and housed in a separate compartment.

Because the flue-gas sample comes in contact only with glass from the time it leaves the stack until it is automatically analyzed, maintenance due to corrosion is eliminated.

Keel laying dates, No. 287, June 16; No. 288, July 1; No. 289, August 6, 1941.

Ten bulk carriers for U. S. Maritime Commission. 595′ x 60′ x 35′.

HENRY C. GREBE & CO., INC.

Chicago, Illinois

New Construction:

Two 135′ mine sweepers for U. S. Navy.

Five 65′ steel harbor tugs.

GREENPORT BASIN & CONST. CO.

Greenport, L. I., N. Y.

New Construction:

Twelve 135′ motor mine sweepers YMS 20-31, for U. S. Navy.

★ **Thirty-seven 50′ tank lighters,** for U. S. Navy.

GULFPORT BOILER & WELDING WORKS, INC.

Port Arthur, Texas

New Construction:

Hulls Nos. 191-194, four diesel-electric tugs, for General Motors Corp., Cleveland Diesel Engine Division. 100′ x 24′ x 12′4″; 1000 shp. **Delivery dates, No. 191, January 3; No. 192, January 21; No. 193, February 28;** No. 194, March 28, 1942.

Hulls Nos. 203-204, two 143-foot rescue vessels, for General Motors Corp.; 1500-shp diesel-electric drive.

GULF SHIPBUILDING CORP.

Chickasaw, Ala.

New Construction:

Four 2100-ton destroyers for U. S. Navy.

Two cargo vessels for Waterman Steamship Corporation. 445′ x 63′ x 40′6″; shelter deck type; geared turbine drive; 15½ knots service speed.

Six 220′ mine sweepers, for U. S. Navy.

Fourteen C-2-S-E1 cargo vessels for U. S. Maritime Commission. 445′ x 63′ x 40′6″; shelter deck type; geared turbine drive; 15½ knots service speed.

HOUSTON SHIPBUILDING CORP.

Houston, Texas

New Construction:

Hulls Nos. 1-37, thirty-seven EC-2 cargo vessels, for U. S. Maritime Commission. Keel laying dates, Nos. 1-2, August 18; Nos. 3-4, July 25; Nos. 5-6, October 23, 1941.

★ **Thirty-two EC-2 type cargo vessels** for U. S. Maritime Commission.

THE INGALLS SHIPBUILDING CO.

Pascagoula, Miss., and Decatur, Ala.

Pascagoula

New Construction:

Hulls Nos. 268, 297-299, four C-3-IN passenger-cargo vessels for U. S. Lines. Completion dates, May, November, December, 1942; and February, 1943.

Hulls Nos. 266-267, two C-3-P passenger-cargo vessels for American-South African Line, Inc. **Completion dates, January and February, 1942.**

Hulls Nos. 293-296, four C-3-S-A-2 cargo vessels for U. S. Maritime Commission. **Completion dates, February, March, May** and June, 1942.

Hulls Nos. 325-336, twelve C3-S-A2 cargo vessels for the U. S. Maritime Commission. 492′ x 69′6″ x 42′6″. Keel layings, from April 30 to December 31, 1943.

Hulls Nos. AN 1-4, four net layers for U. S. Navy.

Decatur

New Construction:

One 9000-bbl. oil barge for Standard Oil Company, Cleveland, Ohio. 195′ x 35′ x 9′9″. **Delivery date, January 1, 1942.**

Hulls Nos. 345-348, four 1300-bbl. oil barges, for Quartermaster Corps, U. S. Army. 230′ x 40′ x 9′6″. Delivery date, April 20, 1942.

Hull No. 349, derrick barge, for U. S. Engineer Department, Galveston, Texas. 80′ x 40′ x 6′6″. Delivery date, March, 1942.

Hulls Nos. 351-354, four cargo barges, for Quartermaster Corps, U. S. Army. 210′ x 40′ x 15′. Delivery date, April, 1942.

GEORGE LAWLEY & SON CORP.

Neponset, Mass.

New Construction:

Twelve 45′ tank lighters for U. S. Navy.

Two 127′ fish trawlers for Booth Fisheries Co. Diesel powered.

Five boats for repair work for U. S. Navy.

Ten 165′ submarine chasers for U. S. Navy.

Conversion:

90′ launch Cutty Sark to U. S. Army launch Captain Dean C. Howard.

LEVINGSTON SHIPBUILDING CO.

Orange, Texas

New Construction:

Hull No. 195, tug, for U. S. Army. 66′ x 17′ x 8′; 300-hp Atlas diesel.

Hull No. 203, coastwise tug for stock. 85′ x 24′ x 9′11″; 600-hp Atlas diesel.

Hulls No. 205; 207-210; five 8500-bbl. oil barges for Pan American. 173′ x 8′6″ x 39′.

Hull No. 206, tug, for River Terminals. 74′ x 20′ x 9′; 400-hp Atlas diesel.

Hulls Nos. 211-212, two tugs. 105′ x 25′ x 9′6″; 1000-hp General Motors diesel.

Hull No. 213, tug, for stock. 85′ x 23′ x 9′6″; 600-hp Superior diesel.

Hull No. 214, tug, for River Terminals Corp. 74′ x 20′ x 9′; 400-hp Atlas diesel.

Hulls Nos. 217-220, four 143′ ocean tugs for General Motors Sales Corp.

Hulls Nos. 221-225, five barges, for G. B. Ziegler. 205′ x 40′ x 19′10″.

Hulls Nos. 226-228, three barges, for Crown Central Petroleum Corp. 173′ x 39′ x 8′6″.

Hull No. 229, barge, for Crown Central Petroleum Corp. 74′ x 20′ x 9′.

★ **Hulls Nos. 230-235, six barges,** for U. S. Army. 74′ x 20′ x 9′.

★ **Hulls Nos. 236-237, two barges,** for Underwater, Inc. 173′ x 8′6″ x 39′.

★ **Hulls Nos. 238-239, two barges,** for U. S. Navy. 173′ x 8′6″ x 39′.

THE LUDERS MARINE CONSTRUCTION CO.

Stamford, Connecticut

New Construction:

Two submarine chasers, PC505-PC506, for U. S. Navy.

Nine small subchasers for U. S. Navy.

Seven 165′ steel subchasers for U. S. Navy. Keel laid, first vessel, July, 1941.

Four wooden subchasers for U. S. Navy.

MANITOWOC SHIPBUILDING CORP.

Manitowoc, Wisconsin

New Construction:

Ten submarines, SS265-274, for U. S. Navy.

MARIETTA MANUFACTURING CO.

Point Pleasant, W. Va.

New Construction:

Hulls Nos. 474-489, sixteen all-steam propelled mine planters, for the U. S. Army. Cost about $12,000,000. **Keel laying dates,** No. 474, May 14; No. 475, May 20; No. 476, June 24; No. 477, July 11; No. 478, November 5; No. 479, December 3, 1941; **No. 480, January 2, 1942. Launching dates,** No. 474, November 4; No. 475, December 2, 1941; **No. 476, January 1, 1942.**

MARINE IRON & SHIPBUILDING CO.

Duluth, Minnesota

New Construction:

Hulls Nos. 70-72, three 180′ cutters of "Cactus" type for U. S. Coast Guard.

JOHN H. MATHIS CO.

Camden, N. J.

New Construction:

Four anti-submarine net tenders for U. S. Navy.

Three 220′ mine sweepers for U. S. Navy.

MIAMI SHIPBUILDING CORP.

Miami, Florida

New Construction:

Thirty-one high-speed, off-shore patrol boats.

NEWPORT NEWS SHIPBUILDING & DRYDOCK CO.

Newport News, Va.

New Construction:

Hull No. 378, battleship 58, Indiana, for U. S. Navy. Keel laid November 20, 1939.

Hull No. 385, aircraft carrier No. 8, Hornet, for U. S. Navy. Launched December 14, 1940. **Delivered.**

Hulls Nos. 390-391 (CL62-CL63), two light cruisers for U. S. Navy.

Hulls Nos. 392-394 (CV9-CV11), three aircraft carriers for U. S. Navy.

Hulls Nos. 395-398 (CV12-CV15), four aircraft carriers for U. S. Navy.

Hulls Nos. 399-400 (CL80-CL81), two light cruisers for U. S. Navy.

THE NEW YORK SHIPBUILDING CORPORATION

Camden, N. J.

New Construction:

BB57, South Dakota, battleship for U. S. Navy. Keel laid July 5, 1939.

AR5, Vulcan, repair ship for U. S. Navy. Keel laid December 26, 1939.

CL55, Cleveland; and CL56, Columbia; two cruisers for U. S. Navy. Order placed March 23, 1940.

CL57 and CL58, two cruisers for U. S. Navy. Order placed June 12, 1940.

AV7, Currituck, seaplane tender for U. S. Navy.

CL59-CL61, three cruisers for U. S. Navy.

CB1-CB6, six cruisers for U. S. Navy.

CL76, four cruisers for U. S. Navy.

NORTH CAROLINA SHIPBUILDING CO.

Wilmington, N. C.

New Construction:

Hulls Nos. 1-37, thirty-seven all-welded steel EC-2 cargo vessels for U. S. Maritime Commission. Keel laying dates, No. 1, May 22; No. 2, May 22; No. 3, May 28; No. 4, August 22; No. 5, September 3; No. 6, September 4; No. 7, October 12; No. 8, October 21, 1941.

THE PUSEY & JONES CORP.

Wilmington, Del.

New Construction:

Hulls Nos. 1082, Hains; and 1083, Hoffman; two seagoing hopper dredges for War Dept., U. S. Engineers Office, Philadelphia, Pa. 215′10½″ x 40′ x 15′6″; approx. 2000 gross tonnage; diesel-electric propulsion, 950 shp. **Delivery dates, February and August,** 1942.

Hulls Nos. 1084-1093, ten C-1A type cargo ships for U. S. Maritime Commission. 412′3″ x 60′ x 37′6″; 9000 dwt; 4000-hp steam turbine propulsion.

R. T. C. SHIPBUILDING CORP.

Camden, N J.

New Construction:

Hull No. 137, 995-ton motor tanker. 190′ x 36′ x 12′.

Hulls Nos. 138-139, two 985-ton motor tankers. 190′ x 36′ x 12′.

Hulls Nos. 140-142, three tankers for U. S. Navy.

SOUTH PORTLAND SHIPBUILDING CORP.

Portland, Maine

New Construction:

Hulls Nos. 201-216, sixteen EC-2 type cargo vessels, for U. S. Maritime Commission.

★ **Thirty-three EC-2 type cargo vessels,** for U. S. Maritime Commission.

SUN SHIPBUILDING AND DRY DOCK COMPANY

Chester, Pa.

New Construction:

Hulls Nos. 202-206, five C-2 cargo vessels for U. S. Maritime Commission. 474′ x 63′ x 40′6″; 7400 gross tons; diesel propelled; 7500 shp; 16 knots. Launching dates, No. 202, August 23; No. 203, September 20; No. 204, October 18; No. 205, December 20; No. 206, December 30, 1941.

Hulls Nos. 213-216; 219-220, six tankers for Panama Transport Co. 547′3″ x 70′ x 40′; 11,400 gross tons; 7500 shp; 15 knots speed. Launching and delivery dates, 1942-1943.

Hulls Nos. 221-222, two tankers for Keystone Tankship Corp. 520′ x 68′ x 37′; 10,600 gross tons; turbine; 12,000 shp; 16½ knots. Keel laying dates, No. 221, June 12; No. 222, September 11, 1941. **Launching dates,** No. 221, October 4, 1941; **No. 222, January 17, 1942.**

Hulls Nos. 223-225, three tankers for The Texas Co. 513′10″ x 68′ x 36′; 9300 gross tons; turbine; 9000 shp; 16 knots. Keels laid, No. 223, August 6; No. 224, October 2; No. 225, October 23, 1941. **Launching date, No. 223, January 3, 1942.** Delivery dates, 1942.

Hull No. 226, tanker for Kaymar Tankship Corp. 520′ x 68′ x 37′; 10,600 gross tons; turbine; 12,000 shp; 16½ knots. **Keel laying date, December 24, 1941.**

Hulls Nos. 227-228, two tankers for Seamar Tankship Corp. 520′ x 68′ x 37′; 10,600 gross tons; turbine; 12,000 shp; 16½ knots. Keel laying dates, 1942.

Hull No. 230, tanker for Atlantic Refining Co. 474′ x 65′ x 37′; 8000 gross tons; turbo-electric; 5000 shp; 14½ knots. Launching date, September 19, 1941. Delivery date, 1942.

Hulls Nos. 231-232, two tankers for Keystone Tankship Corp. 520′ x 68′ x 37′; 10,600 gross tons; turbine; 12,000 shp; 16½ knots. Delivery date, 1942.

Hulls Nos. 233 and 240, two tankers for Gulf Oil Corp. 485′ x 68′ x 36′; turbine propelled; 14½ knots. Delivery dates, August, 1942, and December, 1942.

Hull No. 234, tanker for Sun Oil Co. 547′3″ x 70′ x 40′; 11,400 gross tons; diesel propelled; 7500 shp; 15 knots. Delivery date, 1942.

Hulls Nos. 235 and 237, two tankers for Standard Oil Co. of N. J. 547′3″ x 70′ x 40′; 11,400 gross tons; turbine; 7500 shp; 15 knots. Delivery date, 1942.

Hull No. 236, tanker for Atlantic Refining Co. 543′10″ x 70′ x 40′; 11,600 gross tons; turbo-electric; 5000 shp; 13 knots. Launched, November 15, 1941. Delivery date, 1942.

Hulls Nos. 238-239, two tankers for Standard Oil Co. of Calif. 521′ x 70′ x 40′; turbine propelled; 15½ knots. Delivery dates, November and December, 1942.

Hulls Nos. 241-312, seventy-two tankers, for U. S. Maritime Commission.

★ **Hulls Nos. 313-322, ten tankers,** for U. S. Maritime Commission.

★ **Hulls Nos. 323, 328, two tankers,** for Sun Oil Co. 547′3″ x 70′ x 40′; 11,600 gross tons; diesel propelled; 7500 shp; 13 knots.

★ **Hulls Nos. 324-326, three 16-knot tankers,** for Texas Co. Single-screw steam turbine; 13,285 tons dwt.

★ **Hulls Nos. 330-339, ten tankers,** for U. S. Maritime Commission.

TAMPA SHIPBUILDING CO.

Tampa, Fla.

New Construction:

Hulls Nos. 37-40, four C-2 type cargo vessels for U. S. Navy. 459′ x 63′ x 31′6″; 9291 dwt tons.

Three destroyer tenders, **Piedmont, Sierra and Yosemite.**

★ **Sixteen mine sweepers,** for U. S. Navy.

TODD-BATH SHIPBUILDING CORP.

Bath, Maine

New Construction:

Hulls Nos. 1-30, thirty cargo vessels for British Purchasing Commission. Cost $50,000,000. Keel laying dates, No. 1, May 24; No. 2, June 4; No. 3, June 18; No. 4, June 18; No. 5, August 2; No. 6, July 16; No. 7, July 25; Nos. 8 and 9, December 21, 1941. **Launching dates, Nos. 1-2, December 20, 1941; Nos. 3-4, February 15;** Nos. 5, 6 and 7, March 1; Nos. 8 and 9, April 1, 1942.

★ **Twenty-seven EC-2 type cargo vessels,** for U. S. Maritime Commission.

F. B. WALKER & SONS

Pascagoula, Mississippi

New Construction:

Two steel tugs, 75′ x 19′ x 8′6″.

★ **Two steel oil barges.** 132′ x 32′ x 8′.

★ **One tug.** 600 hp; 83′ x 19′ x 8′4″.

WHEELER SHIPBUILDING CORP.

Whitestone, N. Y.

New Construction:

Sixteen large wooden mine sweepers for U. S. Navy.

WHEELER SHIPYARDS, INC.

Brooklyn, N. Y.

New Construction:

Ten bomb target boats for U. S. Navy.

Forty 83′ cutters for U. S. Coast Guard. Cost $42,500 each.

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News from Pacific Northwest

(Continued from page 47)

launched January 5. The new subchaser was built at the Albina Engine & Machine Works and the launching was witnessed by only a small group of naval officers and guests. Keel was laid September 1.

Marine Shorts

One more Alaska ship that has recently been taken over by the Government is the **Tyee** of the Alaska Transportation Co. She has been chartered by the Navy. The Army recently chartered the **Taku** from the same company. **Tongass,** sole remaining vessel of the company at this writing, has also just been chartered.

The Northland Transportation Co. has had its fleet similarly reduced, having turned over to the Government the **North Wind, North Coast** and **North Haven.** Remaining for commercial use at this time are the North Sea and Northland, and these will probably be in Government service by the time this is in print.

* * *

Trustees of the Waterfront Employers Association of Washington for 1942 have been elected at this date as follows: **Geo. W. Albin,** Ames Terminal Co.; **E. C. Benson,** president Olympia Steamship Co.; **H. W. Burchard,** Burchard & Fisken; **R. C. Clapp,** Rothschild Stevedoring Co.; **A. R. Linter,** American Mail Line; **M. McKinstry,** Alaska S. S. Co.; **H. E. Rhoda,** Luckenbach Steamship Co.; **William Semar,** Northland Transportation Co.; **F. E. Settersten,** Griffiths & Sprague Stevedoring Co.; **Sam B. Stocking,** Shaffer Terminals, Inc.; **W. D. Vanderbilt,** Grace & Co.; and **C. B. Warren,** Alexander & Baldwin. The annual meeting to elect officers was due to be held late in January.

Representing 2000 fishermen and 175 vessels, the Fishing Vessel Owners' Association, at its annual meeting at Seattle January 7, elected **Capt. Peter Jacobsen,** owner of the fish vessel Paragon, president; **Capt. John Hansen,** owner of the Masonic, vice president; and **Capt. Peter Peiren,** owner of the Flamingo, secretary. The following captains were named trustees: **Matt Madsen** (Ilene); **Carl Sather** (Faith II); **N. J. Mathisen** (Recovery); **W. C. Hurley** (La Paloma); **H. E. Lokken,** manager since 1924, was maintained.

* * *

After being elected president of the Transportation Club of Seattle for 1942 at the last annual meeting, **D. R. Ostrander** was forced to resign the position before assuming office as a result of pressure of other duties. At a special meeting of the board, his resignation was accepted and **H. N. Peterson,** general passenger agent for the Alaska Steamship Co., was elevated from position of first vice president to succeed him. The 32nd annual dinner of the club was held on January 17.

* * *

Marine Short-Shorts

Sand Point Naval Air Station officials have been annoyed by yacht owners failing to observe the restricted zones set up by the Navy near the station and now the Navy is threatening to get tough with them if they do not desist. . . . American Mail Line's Cape Flattery, one of the five C-1-Bs built by the Seattle-Tacoma Shipyards, looms large on the cover page of *Keel,* house organ of the Todd Shipyards Corporation. . . . In a notice to mariners pertaining to Alaskan waters, navigators have been warned that aids to navigation are likely to be moved, changed or discontinued without notice and extreme caution is urged in using them. . . . Thirty-five fewer vessels called at the port of St. Helens, Ore., during 1941 but the lumber shipments increased by a million feet. . . . Stock control by the United Warehouse Co. at Seattle has been purchased by R. G. Culbertson, president of Seattle Terminals, Inc.

* * *

Personal Gleanings:

First of several officers in the Coast Guard at Seattle to receive temporary promotions on account of the war is Chief Boatswain **K. C. Tharp** who has been advanced to the rank of full lieutenant. Pay Clerk **Edson** has also been advanced to the rank of lieutenant, junior grade. . . . **E. L. Sheehan,** general agent of the Passenger Department of the Canadian Pacific in Seattle since 1924, retired on his pension the first of the year. He has been replaced by **Arthur J. Mahon** who came here August 1 from Vancouver. . . . **Capt. Frank J. Smith,** 81, early Willamette River steamboat captain and marine historian, died in Portland January 4. . . . **Roy S. Wintemute,** for 20 years executive of the General Steamship Corp., Ltd., has been appointed assistant port consultant in the ocean traffic section of the Army Transport Service. . . . **Walter D. Brennan,** traffic manager for States Steamship Co. and allied firms during the last two years, has entered active service with the Navy at Seattle with the rank of junior lieutenant. . . . **Graham French** of the Great Northern Seattle offices will be transferred to Spokane January 16 as traveling passenger agent. . . . **K. J. Middleton,** head of Dodwell & Co., has been named vice president of the Waterfront Employers of the Pacific Coast.

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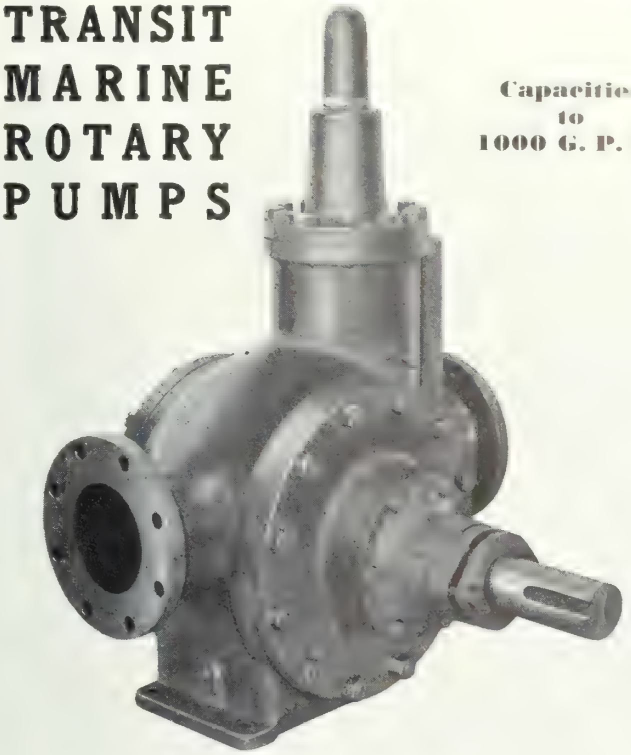

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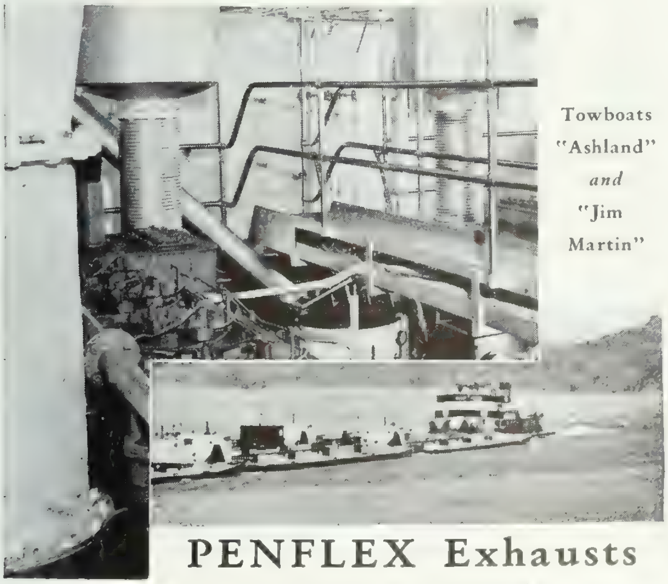

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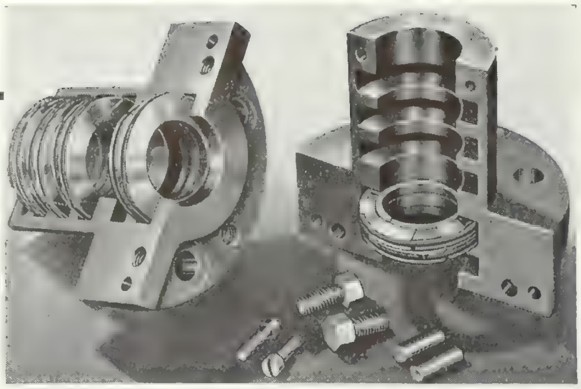

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A recent factory shipment included the 12 Vikings pictured, each of 1050 GPM capacity, ready for assembly into complete units to be installed on barges to load and unload petroleum products. The finished job includes bases, back gearing, supporting bearings and gear guards ready to accept power units.

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Recent Development in Ship, Yard and Dock Equipment

Carrier Gets "E" Pennant

Carrying out its policy of encouraging efficiency in national defense contract work, the U. S. Navy, on September 11, presented the Navy Ordnance flag and the Navy "E" (Efficiency) pennant to the Carrier Corporation at their Syracuse, N. Y. plant.

Representatives of the Navy, Army and New York State and Federal Government were present to hear Cloud Wampler, executive vice president of Carrier Corporation, introduce the guest of honor, Assistant Secretary of the Navy Ralph A. Bard, from a flag-draped platform built for the ceremonies in the plant's yard, where 1800 employees were gathered.

With the presentation of the Navy "E," one of the Navy's most coveted honors, Carrier Corporation became the fifteenth industrial organization to receive the right to fly the Navy's Ordnance flag and pennant.

REFRIGERATION COMPRESSOR in assembly line at the Syracuse, N. Y., plant of the Carrier Corporation

"The splendid achievement of the Carrier Corporation, its management and its employees in producing an ever growing output of ordnance for the United States Navy is characteristic of the vigor, intelligence and patriotism which have made America great and which have kept her free," declared Secretary of the Navy Frank Knox in a telegram read during the ceremony by J. I. Lyle, president of Carrier. "On this occasion of public recognition of your accomplishment please accept my congratulations," Secretary Knox concluded.

The naval flags were presented by Assistant Secretary Bard to C. A. Ostling, production vice president, and John A. Gruner, general superintendent of the Heavy Machine Division, who accepted them in behalf of the employees.

Individual "E" buttons were presented to all employees during the ceremonies.

Silver-Lined Blackout Bulb

Designed for blackout lighting in air raids, the new Wabash blackout bulb just announced by the Wabash Appliance Corporation, Brooklyn, N. Y., provides downlighting in a soft beam of blue light that is safe for indoor visibility during blackouts. The bulb is lined inside with a pure silver reflector lining that hides all filament glare and projects the light downward. Light leaks are prevented by a black silicate coating that covers the bulb up to the extreme lighting end which is a deep blue. The new bulb consumes 25 watts.

Low Visibility Paint

A new type of low visibility paint, possessing exceptional heat deflecting qualities, has been developed by The Arco Company, Cleveland, for use in the protective concealment of vital defense structures and equipment.

Already in use on certain Government properties, the new paint meets tentative Navy specifications for infra-red reflecting paints for use on fuel storage tanks, buildings, and certain types of equipment where dark colors as well as heat reflecting qualities are required.

It has just been offered commercially under the trade name of "Infray" and is being manufactured in green, tan, black and four intermediate shades which, when properly selected, will meet the requirements of good camouflage in any sort of terrain.

"The unusual degree of heat deflection which can be obtained with the darker colors in these paints promises to be of particular value to public utilities, oil producers and refineries, and to anyone who has to store large quantities of volatile materials in tankage above ground," Paul L. Hexter, vice president of the company, stated. "This fact, combined with the low visibility, should go a long way toward meeting the need for protection of fuel supplies.

"When you realize that an approaching bomber has to sight his target at a distance of about twelve miles, the importance of any low visibility paints which approach the qualities of aluminum paint in their heat deflection can be readily understood."

A Safety and Inspection Seal

Industry has a new ally for sabotage-prevention: a completely tamperproof safety and inspection seal that also allows for secret identification markings.

These new Stoffel seals guard and fully guarantee against any tampering, alteration or substitution. They are made of two components: the preshaped metal seal-cup and the individualized identification disk, multicolor printed.

These seals can be permanently applied with either string, thin cord or two-ply wire, whichever is most suitable to the sealing operation with the light-weight sealing pliers. Once these two component parts are locked, the seal cannot be altered without immediate visual detection. Unlike the old-fashioned lead seals, Stoffel seals are 100 per cent tamperproof, defy, in fact, any tampering attempts, and, once removed, cannot possibly be used again.

These new, sabotage-preventing seals are already effectively aiding national defense: In keeping fire extinguishers of plants safe from interference, after periodical inspection, without immediate visual detection; in sealing inspected parts for Army material, for protection until they reach assembly line; in sealing drums and containers for similarly effective protection.

For such purposes, Stoffel seals are at present serving many outstanding defense plants.

New Protective Device For Series Capacitor

The use of capacitors in series with a power line or a circuit to eliminate voltage fluctuations caused by inductive loads has long been known, and has been made to a slight extent. But the lack of inexpensive protection for the series capacitor against damage by short-circuit currents has prevented its use in many industrial jobs, such as eliminating voltage swings in welding plants.

The difficulty was to obtain a gap that would break down consistently, at only a few hundred volts, without burned electrodes. There have been ways of doing this, but all have been more costly and bulkier than a new device built by Westinghouse. It is an air gap under partial vacuum between two dollar-size brass electrodes, all enclosed in solder-sealed porcelain. The partial vacuum causes the current, on gap breakdown, to distribute itself uniformly over the entire surface of electrode without scarring it.

This new gap gives identical performance after repeated operations. Because it is small, it can be mounted with the contactor and high-voltage bushing in a cabinet only slightly larger than a standard capacitor unit. This protective combination not only prevents injury to the series capacitors caused by over currents, but also returns them to service as soon as the overload passes—all without attention. In fact, an operation counter is connected to the circuit to give a record of how many times the device has functioned.

Damaged Engine Repaired By Arc Welding

The newest and perhaps most spectacular feat of the electric arc is the repair of the sabotaged engine of the S. S. Villaperosa, interned Italian cargo vessel at the Atlantic Basin Iron Works, New York.

Damage to the engine, consisting of breakage of the bedplate literally into pieces, resulted when the huge crank arms, turned over by compressed air, jammed against heavy pieces of steel which were placed across the bed plate by saboteurs.

The principal damage was at the approximate center of the engine and in the middle of the frame.

Arc welded repair consisted of fusing the many broken pieces of cast iron back together and joining reinforcing steel plates to steel dowel pins inserted in the bedplate. "Ferroweld" and "Stainweld A5" arc welding electrodes, together with 200-ampere, electric motor-driven, Lincoln "Shield-Arc" welding machines were employed for the work.

First step was the veeing out, or beveling, to 45 degrees of each broken piece of cast iron. This was followed by fitting the various pieces in place and tack welding.

THREE VIEWS showing repair of damaged engine bed plate by welding

Arc welding of the cast iron was done in accordance with standard procedure for "Ferroweld" electrodes, made expressly for work in cast iron.

Narrow beads—deposits of weld metal—never exceeding 3 inches in length were employed and the work was prevented from becoming too hot in order to avoid warping. Keeping the work cool by resting between welds, each bead, or weld, was lightly peened by hammer before proceeding with the next.

Following the arc welding of all broken pieces of cast iron back into position, steel plates were fitted to the outside of the engine bedplate and holes drilled through the plates and the cast iron. Steel dowel pins of approximately 1-inch diameter were fitted into these holes and arc-welded to the steel plate and to the cast iron. A special taper at each end of the pins allowed deep penetration of the weld metal into both the steel and the cast iron.

The speed with which the welding was done by the electric arc process, as compared with other less modern methods of welding, was reported due to the fact that with the electric arc no preheating of parts to be welded is necessary. All that is required is to shape the parts, properly fit them and, finally, simply fuse them together, allowing time between welds to keep the work cool.

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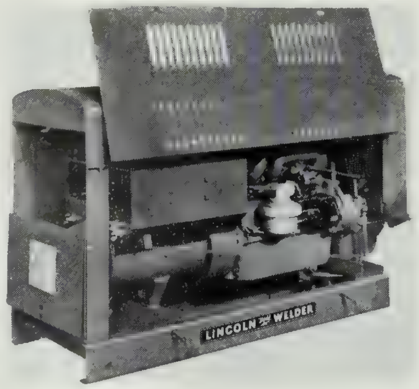
A New Meteor Electric Hoist

The Chisholm-Moore Hoist Corporation, manufacturers of hoists and trolleys, announces a new CM Meteor heavy-duty electric hoist.

Some of the more important features of this hoist include: streamlined design that provides compactness and eliminates excess weight; aeroplane type cooling fins that quickly dissipate the heat generated by gears and load brake; fully enclosed, weatherproofed design that permits the Meteor to be universally used, indoors and out. For extra safety, fully-enclosed, safety-type hook blocks are used, and a specially-designed electrical system that permits only 110 volts to pass through the push button station.

The new CM Meteor heavy-duty electric hoist is the result of years of research and experimentation both in the laboratory and in actual field service. When finally placed on the market, these hoists proved their ability to facilitate production, release more man-hours for other operations, and afford complete safety to men and materials. CM Meteor heavy-duty electric hoists are available in capacities of one-half ton and up.



New Engine-Driven Arc Welder

A new engine-driven arc welder, which embodies a new system of engine-speed control of maximum fuel economy and minimum engine wear, is announced by The Lincoln Electric Company.

Of 200-ampere size, this unit has a current range of 40 to 250 amperes, and can be used for the welding of light gage metal, for the repair of cast iron parts such as engine blocks, for fabrication of machine parts and structures of many kinds, and for hardfacing of worn parts. Of direct current type, it can weld effectively practically all metals and alloys with bare or shielded arc type electrodes, or with the carbon arc where desirable. Its compactness and light weight make it readily portable, and hence suitable for work in remote locations, as well as those applications which are readily accessible.

The control directly varies the speed of the engine from 1800 to 1400 for welding duty. Manually, this control may be used to bring the engine to an idling speed of around 900 revolutions per minute for idling periods. The welder will generate its rated current of 200 amperes at 1400 rpm. Engine speeds above that are necessary only for currents in excess of 200 amperes.

The welder is powered by a Hercules industrial engine, equipped with centrifugal type governor, high tension magneto with impulse starter coupling, and oil bath air cleaner.

Net weight of the unit (stationary model) is 890 pounds. Dimensions: 56 inches by 37 inches by 20 inches.

Manila Rope For Defense

In cooperation with America's Defense Program, Tubbs and Portland Cordage Companies have just issued a new booklet, "The Care of Manila Rope." Manila rope is a product that is vitally needed in Uncle Sam's defense program. Like metals and other important defense materials, it should be conserved in every way possible.

This booklet discusses the care and handling of Manila rope and contains many helpful suggestions for getting better wear and service from this product. The advice given also applies to rope constructed wholly or in part from other hard fibers.

This new booklet will be gladly supplied without cost to any rope user by writing Tubbs Cordage Company, 200 Bush Street, San Francisco, or Portland Cordage Company at Seattle, Washington, or Portland, Oregon.

A New Babbitt Metal

A new babbitt metal for bearings subject to high pressures and temperatures has been developed by Magnolia Metal Company, long-established manufacturers of anti-friction metals.

This metal, known as Power Nickel Genuine Babbitt, has a tensile strength of 17,500 lb. per sq. in., a yield point of 65,000 lb. per sq. in., a Brinell hardness of 27, and its pouring temperature ranges from 950 to 1000° F.

The high softening and melting temperatures make the metal resistant to extreme local heat. Its unusual strength makes the metal adapted to very heavy bearing loads, such as are encountered in railroad service, heavy rolling mill machinery, and paper mill machinery.

The nickel treatment gives the metal a hard glossy surface, desirable for generators, motors and other high speed application.

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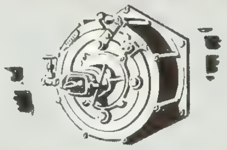

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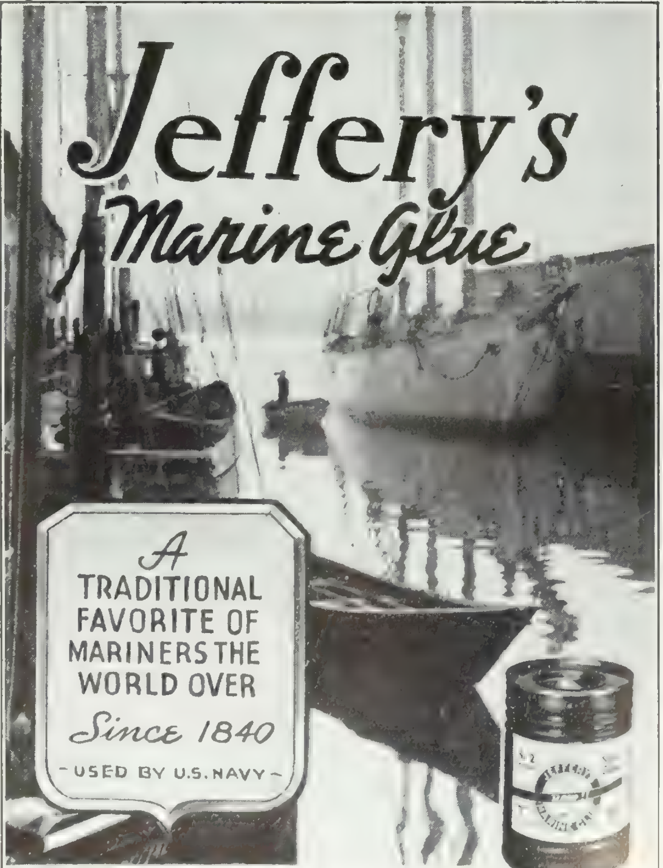

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VERTICAL LIFT BRIDGE over the Natches River near Beaumont, Texas. A Westinghouse 75-hp motor lifts the 245-foot span 136'6" in two minutes and 30 seconds, giving a 153-foot vertical clearance over mean water level

New Drum Controllers For Small Hoists

A new line of drum controllers for small cranes and hoists is announced by Cutler-Hammer, Inc. Small and compact in size, these new drums have several features of outstanding interest.

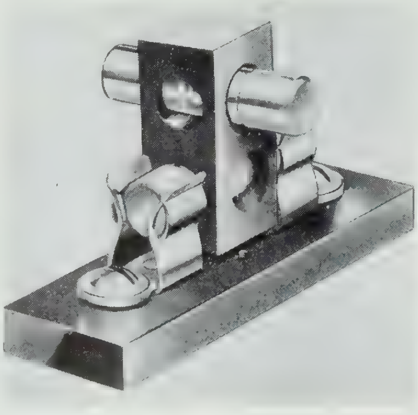
A rope operating lever, embodying a new equalized torque principle, entirely eliminates cumbersome sheave wheel, rope guard and external return spring, and provides smooth, easy operation even when the rope is pulled at an angle.

A new Anti-Plug feature increases drum life by making it impossible to whip drum from full forward to full reverse position. Drum can be reversed quickly, but yet a definite time delay is required in the off position.

These new drums are available in self-centering rope lever, self-centering and non-self-centering radial lever types, for four or six speeds.

Packaged Power For Welding

Packaged power is now supplied for the Unionmelt process, by which steel plates as thick as three inches are welded automatically at a single pass. Using equipment supplied by Westinghouse, this process, developed by The Linde Air Products Company is being used for welding everything from range boilers to ocean-going ships. Semi-portability is greatly desired, as in shipyards where the apparatus can be lifted by a crane and set down somewhere in a partially finished ship. To move the transformer, its control, and auxiliary equipment as separate pieces is a nuisance, takes time, and gives more opportunity for trouble to develop. Now all these have been consolidated into a single, compact package that can be handled as a unit.



A quick-change fuse holder

A Three-Shift Tool Stand

A new Penco "3-shift" tool stand is now manufactured on a production basis by the Penn Metal Corporation of Penna., Philadelphia, Pa. The purpose of this tool stand is to keep tools right on the job, thereby saving the time and labor required in maintaining a central tool crib for certain types of tools. Each of the three drawers locks separately—a single drawer for each shift, which makes each man responsible for his own tools.

Designed for heavy-duty service with all-welded steel construction, 12-gage steel shelves and heavy angle legs. Drawers are 18" wide, 16" deep and 5" high. Over-all size of each unit is 30" wide, 18" deep and 32" high.

Because of the convenience and time-saving features of this portable and protected tool storage stand, it should be rapidly adopted for 24-hour service in war production lines as well as in training schools, machine shops and service stations.

Quick Fuse-Changing In Close Quarters

An entirely new convenience for changing fuses in close quarters—replacing a blown fuse in a twinkling—and giving notice on inspection that another spare is required, are features compactly embodied in a spare fuse holder and puller combined, just announced by Littelfuse, Incorporated.

These new devices are applicable to all 4 A G and 5 A G fuses. The fuse in circuit goes through one end of the soft rubber rectangular Littelfuse holder, between the clips. Above, and at right angle, is an opening in the holder for the spare fuse.

When the fuse in circuit blows, all the operator has to do is to pull and reverse the Littelfuse holder.

One end of the Littelfuse holder and puller is painted red. Until a fuse change is necessary, the red end is underneath, out of sight. When a reverse is made, putting the spare fuse in circuit, the red end is brought into full view on top. To an inspector or service man, this red signal instantly indicates that a fuse has blown and that another spare is required.

"Windows" in the spare fuse holder and puller keep the elements of both fuses in view at all times.

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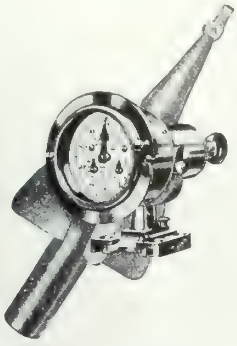

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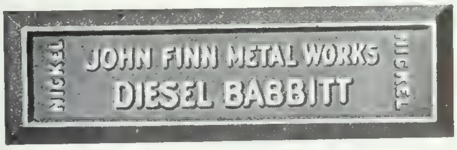

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THE CLARK "CLIPPER" is a very handy and powerful servant in close quarters

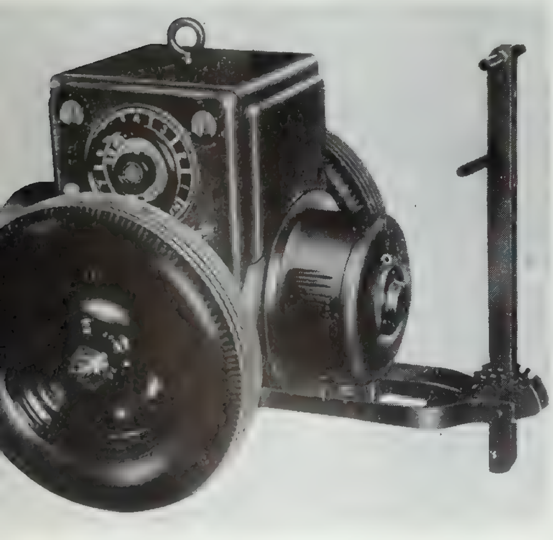
The Clark "Clipper" Lift Truck

Many stevedores and marine terminal operators, unable to use heavy material handling equipment due to weak floor construction, have desired a lightweight, compact power truck that would lift, carry and tier loads weighing up to one ton; one that could efficiently operate in congested areas, in limited capacity elevators, in transport trucks and freight cars, and up ramps.

To meet this demand Clark Tructractor Div. of Clark Equipment Co., the leading manufacturer of industrial trucks and tractors, has developed a sturdy, low-priced, compact fork type truck that incorporates all desirable features in modern truck design. Christened the "Clipper," these trucks are offered in six models, capacities 1000, 1500, 2000 lbs., with standard finger-lifting heights of 60 to 108 inches, other special heights optional.

Gas-powered for 24-hour continuous service, an important factor in an industry subject to seasons when plants *must* operate at full capacity, the "Clipper" has an economical four-cylinder lift and tilt. Self-starter and hydraulic brakes are standard equipment. The driver rides on a comfortable spring suspended seat with all controls within easy reach, thus permitting safe operation at speeds from one to seven miles per hour forward or reverse.

Operating on shipboard, on the wharves and in terminal warehouses, these dwarf-size trucks speed loading and unloading operations, tier their loads ceiling high, cut cargo-handling costs and increase warehouse capacity.



A CONVENIENT HAND TRUCK, built by Hobart Bros. for easy moving of their welders

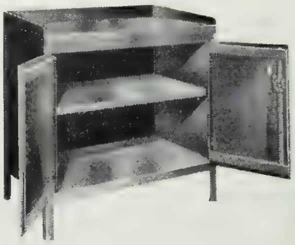
New Type Grinding Wheel

A. P. deSanno & Son, Inc., Phoenixville, Pa., is introducing a new Radiac product—Por-os-way. Por-os-way is a new type precision grinding wheel—produced by a new patented process.

It is said that Por-os-way, properly used, takes deeper cuts, breezing through .010″ or more, also that it grinds 100 to 400 per cent faster, increasing production per man per machine two to five times.

The structure, instead of being "sandy" and compact is "stringy" and porous—resembling a sponge. Air cells allow the air to keep every grinding contact cool, yet it is claimed Por-os-way is hard, tough, holds the corner and requires little dressing—due to a new vitrified bond.

Por-os-way grinds hard alloys, copper, aluminum, wood, rubber, plastics and other soft materials with minimum loading.



Machine Tool Cabinets

Lyon Metal Products, Incorporated, offers the machinist a handy work bench-cabinet which features security and all-around usefulness. Heavy gage working surface is ideal for small vises and grinders.

Twelve square feet of enclosed storage area are protected by full swinging triple-latch doors, equipped with padlock hasp or built-in flat key lock. Center shelf is adjustable on 1½-inch centers. Finished in durable Lyon green baked enamel.

Pumps On a Modern Yacht

Interesting applications of Blackmer Rotary Pumps, both power-driven and hand-operated, have been made on the very modern, new Burger steel cruiser Pilgrim, recently put into service.

A standard hand pump is used for transferring diesel fuel oil from the main storage tanks to the day-tank which supplies the auxiliary diesel generator.

A 20-gal.-per-min., electric motor-driven unit is used as an emergency bilge pump to operate in case the boat leaks in any one or all five compartments. Another Blackmer 20 gpm unit, electric motor drive, is connected to the sump tank into which wash basins and shower trays are drained.

Pilgrim is a 65′ x 16′ electric-welded steel cruiser, designed and built by the Burger Boat Company of Manitowoc, Wisconsin, for a prominent midwest manufacturer and yachtsman. Her hull is built entirely of steel except the decks, which are of teak. All of the joiner work and interior partitions are weldwood veneer.

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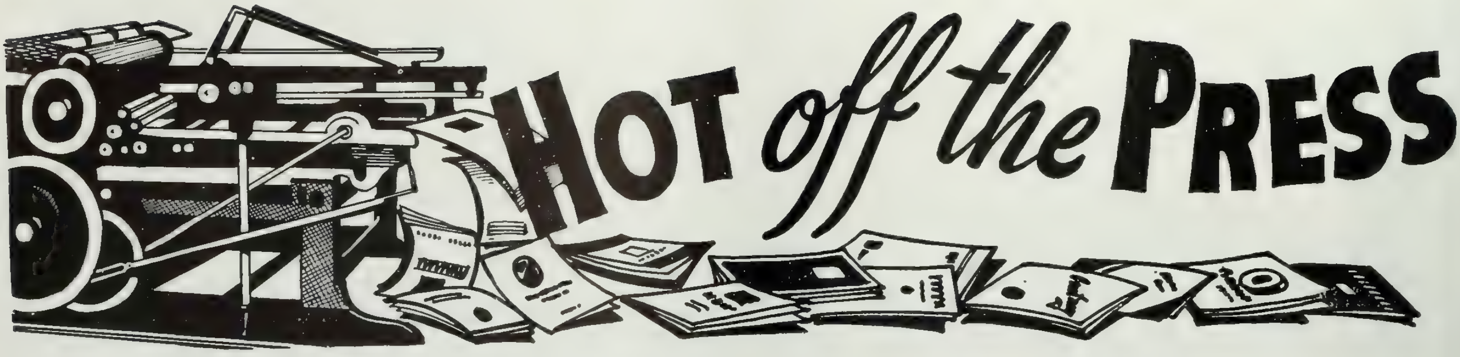


HOT off the PRESS

The Catalogs of Today Become the Technical Handbooks of Tomorrow

Silver-Ply Stainless-Clad Steel, a new 16-page price list for Silver-Ply stainless-clad steel, just issued by the Jessop Steel Co.

This list contains base prices for sheets and plates of Silver-Ply for twelve grades of cladding, in proportionate thicknesses of cladding from 5 to 50 per cent. The section on standard classification of extras for plates includes tables on machining, shearing and flatness tolerances, estimated weights, and size limits for standard production plates and sheets. The standard classification of extras for sheets includes extras for finish, shearing, size and quantity.

The last section of the price list contains prices for forming and for machining standard flanged and dished heads, A.S.M.E.-A.P.I. flanged and dished heads, and elliptical dished heads.

Plumbing Drainage Products, catalog No. 42 of the J. A. Zurn Manufacturing Co. of Erie, Pa., said to be the most up-to-date and comprehensive source of buying information on these products available anywhere in a single volume.

The catalog was developed to provide buyers and specifiers of marine drainage products with a reference book that would simplify and speed up the job of specifying and buying these products for both new construction and modernization of naval, cargo and passenger vessels, and of pleasure craft of all types.

Indexed for quick and easy reference to any product or group of products, this catalog forms an excellent hand book on its subject.

Electric Heating Units and Controls, a recently revised, 38-page catalog (No. 28-000 7-N-20) was announced by Westinghouse Electric and Manufacturing Company.

Specification, descriptions, ratings and prices of the following types of heaters are covered:

Strip heaters for use in ovens, crane cabs, valve houses, pipe lines, process machinery and hot tables—maximum sheath temperature of 1200° F.

Finned strip heaters required for forced air ducts, blower units or convection heaters.

Cartridge heaters for spot heating in embossing machines, shoe machinery, cigarette machinery, compounding pots and platen heating—up to 750° F.

Corox water and oil immersion heaters for heating mineral oil, paraffin and alkaline solutions, oil tempering, coffee urns, steam tables, sterilizers, humidifiers, etc.

Air and oven heaters for general heating applications, such as crane cabs, truck houses, valve houses, locomotive cabs, scale rooms, garages, etc.

Melting pots for solder, babbitt, paraffin wax and resin—temperature range up to 950° F.

Glue pots with a maintained temperature of from 150° F. to 160° F.

Thermostats, switches and contactors.

Moore Steam Turbines with Combined Reduction Gear, and Moore Multi-Stage Steam Turbines, Bulletins 1951 and 1955, respectively, of the Moore Steam Turbine Division of the Worthington Pump and Machinery Corporation. These bulletins describe and illustrate in detail the impulse type steam turbines built by this well-known firm. Moore turbines are applicable in many uses aboard modern steam vessels, such as: drives for centrifugal pumps on circulating feed, condensate, liquid cargo discharge, and other services; drives for electric generators for lighting and auxiliary power; and drives for induced draft and forced draft fans.

Electrode Consumption Calculator. Cost of arc-welding electrodes can now be estimated rapidly for welding any type of joint on any thickness with either bare or coated electrodes by the use of this new 8-page booklet just published by Air Reduction. It tells just how many pounds of electrodes are required per linear foot of weld.

The calculator includes consumption figures for both bare and shielded arc electrodes on all metal thicknesses commonly employed in making fillet welds, square groove butt joints, V and U groove butt joints, bevel grooves and J grooves.

The amount of steel deposited per linear foot of weld is also shown. As a further aid on other joints not shown, the basic formulas used in these calculations are included.

Fatigue of Metals, a fifty-page, paper-bound booklet, containing a well-illustrated and amply authentic paper on this subject in its relation to the designing engineer. The paper was prepared by D. C. Landau, Industrial Applications Engineer for the Nitralloy Corporation of New York. Mr. Landau brings together in concise form the results of an exhaustive study of the extensive research work on metal fatigue and presents a very useful book of "facts for the designing engineer." This booklet is published by the Nitralloy Corporation.

Giant Developer Speeds Production of Defense Plans

Pressed into 24-hour-a-day service to speed production of defense orders, the largest developing machine of its type in American industry is turning out 18,000 drawings daily at the East Pittsburgh works of Westinghouse Electric and Manufacturing Company. These drawings or prints for the production of electrical equipment are produced by an original method called "Black and White (B.W.) Direct-Printing Process." The 80-inch machine brings out the drawings in black lines upon white paper, developing more than 10 miles of 36-inch wide paper per month.

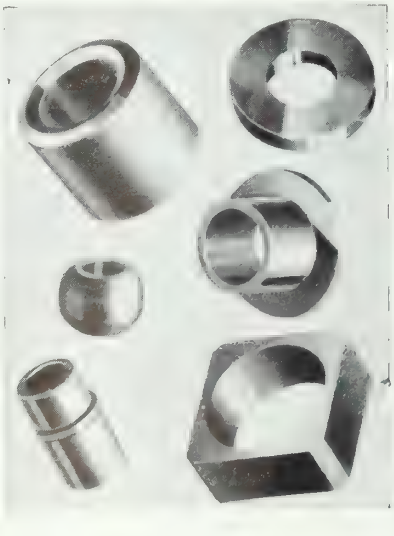
Recently the United States Navy shipped destroyer equipment tracings to East Pittsburgh with rush orders for 553 prints, each ranging from 13 feet to 25 feet in length. The completed prints weighed 200 pounds and were turned out by seven men with the assistance of their mass-production machinery. Such a task, which a few years ago would have overwhelmed the reproduction division's facilities, now can be prepared for shipment within 24 hours without slackening the regular flow of work.

Direct Process Is Three Times Faster

Because of its speed, this direct process promises to replace the traditional blueprint method for most jobs, in the opinion of J. J. Deller, Westinghouse engineer, who was instrumental in the machine's development. This process requires 50 seconds to expose and develop a print, compared to three minutes by continuous blueprint machines. The large machine uses two gallons of water a day instead of 3600 gallons required formerly, and the new method needs less floor space, less power, and costs less to operate.

In direct process, a chemically coated paper is run through the printing machines. Within the printing machine is a powerful carbon arc lamp which shines through the transparent drawing or "tracing" onto a coated paper. Where the light strikes the paper, the coating is dissolved, but where the lines of the tracing cast their shadows the chemical remains. This exposed paper is then fed into the developer which applies a film of developing solution to the exposed side and a small quantity of water to the unexposed side to prevent curling. The chemical coating remaining on the paper reacts with the developing solution to produce a black color and thus the lines of the drawing appear in black.

Giant developer for black and white prints



Selflube iron bearings

Selflube Iron Bearings

The Keystone Carbon Co., Inc., St. Marys, Pa., announces the addition of Selflube porous iron bearings to their line of self-lubricating bronze bearings. The new porous iron bearings are stronger than porous bronze bearings, and they are interchangeable with porous bronze bearings in most applications. They were introduced to conserve copper and were perfected after years of research work in the company's laboratories.

Selflube porous iron bearings are made from powdered iron, which is molded to size in the shape desired, then baked, and finally saturated with a good grade of oil. They have an average porosity of 25 to 35 per cent, enabling them to store a large amount of oil which forms a protective, continuous oil film on the bearing surface. In many instances, this oil reserve lasts the entire life of the application, eliminating the use of oil vents or grease cups. Additional lubrication is recommended for heavy duty or continuous operating units.

The new bearings have a low friction coefficient, which, together with their self-lubricating qualities, prevents excessive temperature, speed reduction, noise and scoring of shaft. As in the case of Selflube porous bronze bearings, they are molded to close dimensional tolerances so that no re-designing or special engineering is required.

Selflube porous iron bearings are supplied in both standard and special shapes, as shown in the accompanying illustration. Complete information will be furnished on request.

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Pacific MARINE REVIEW

Onward, Liberty Parade!

MARCH
1942

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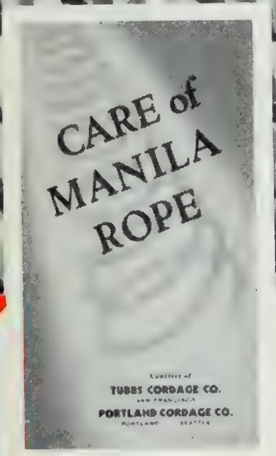

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Pacific MARINE REVIEW

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Official Organ

Pacific American Steamship Association

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Shipowners Association of the Pacific Coast

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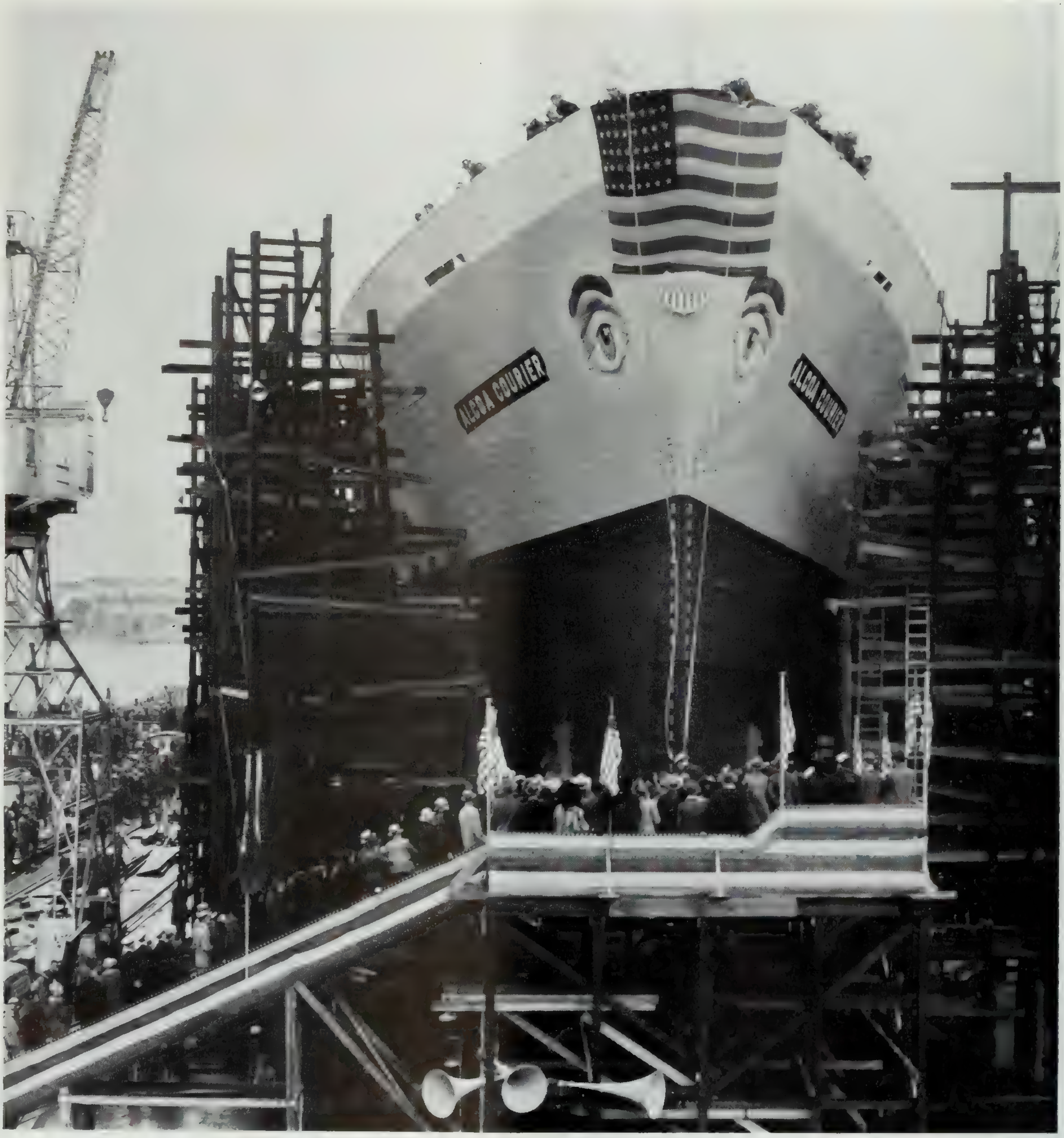
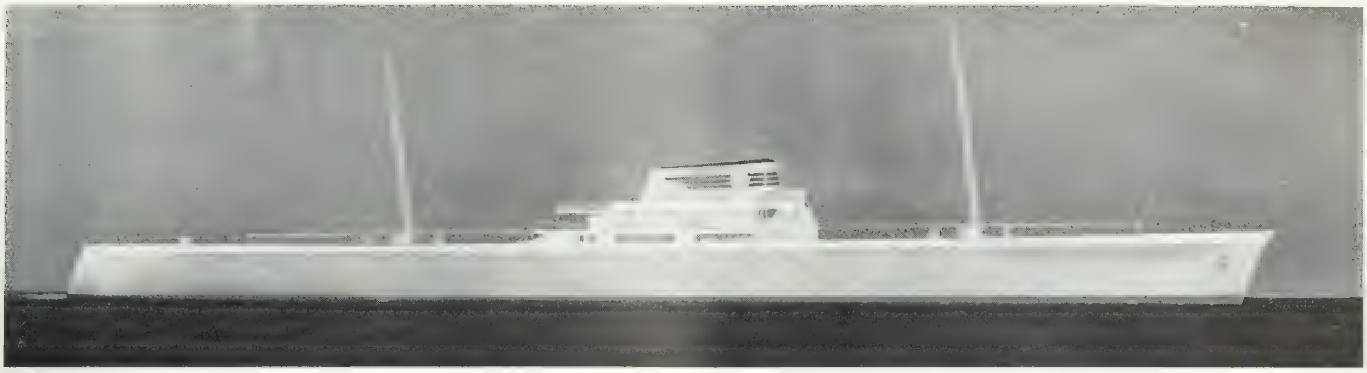


SS ALCOA COURIER

THE MOORE DRY DOCK COMPANY of Oakland launched the S. S. Alcoa Courier on October 21st, timing the event for the day when hundreds of the Nation's leading ship-operating, shipbuilding and Maritime Commission notables were in the San Francisco Bay area for the opening of the Propeller Club Convention-American Merchant Marine Conference. The vessel was constructed for the Alcoa Steamship Company by the U. S. Maritime Commission



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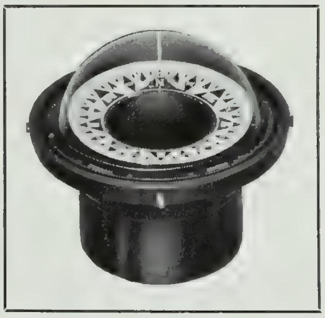

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See a Message to All Employers
on Page 32c

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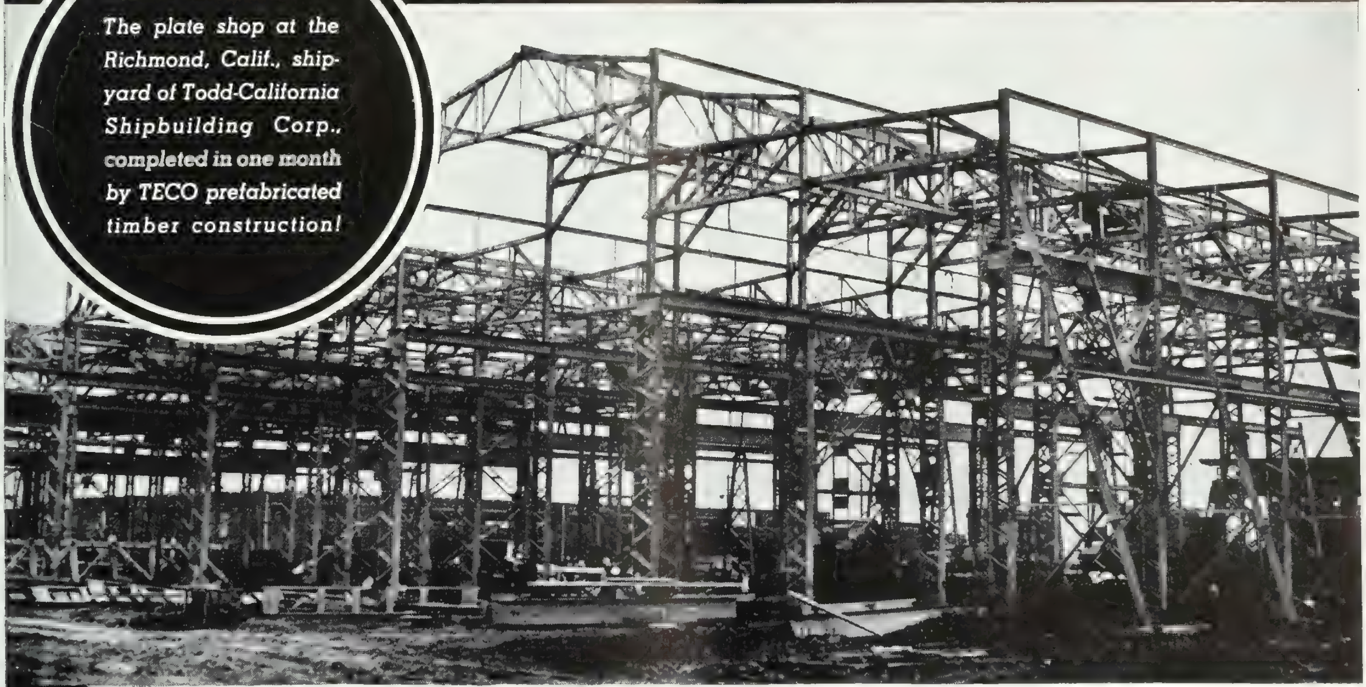

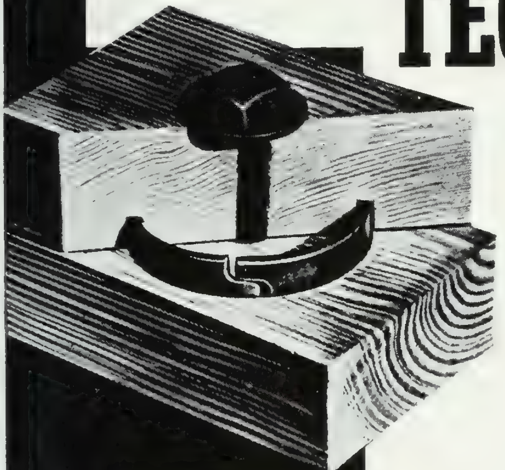

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to
ALL EMPLOYERS

★ From the United States Treasury Department ★

WINNING THIS WAR is going to take the mightiest effort America has ever made—in men, in materials, and in money! Every dollar, every dime that is not urgently needed for the civilian necessities of food, clothing, and shelter, must, if we are to secure final Victory, be put into the war effort.

An important part of the billions required to produce the planes, tanks, ships, and guns our Army and Navy need must come from the sale of Defense Bonds. Only by regular, week by week, pay-day by pay-day investment of the American people can this be done.

This is the American way to win. This is the way to preserve our democratic way of life.

Facing these facts, your Government needs, urgently, your cooperation with your employees in *immediately* enrolling them in a

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The Pay-Roll Savings Plan is simple and efficient. It provides, simply, for regular purchases by your employees of United States Defense Bonds through systematic—yet voluntary—pay-roll allotments. All you do is hold the total funds collected from these pay-roll allotments in a separate account and deliver a Defense Bond to the employee each time his allotments accumulate to an amount sufficient to purchase a Bond.

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GPO 16—25943-1 Form No. DSS-BP-2

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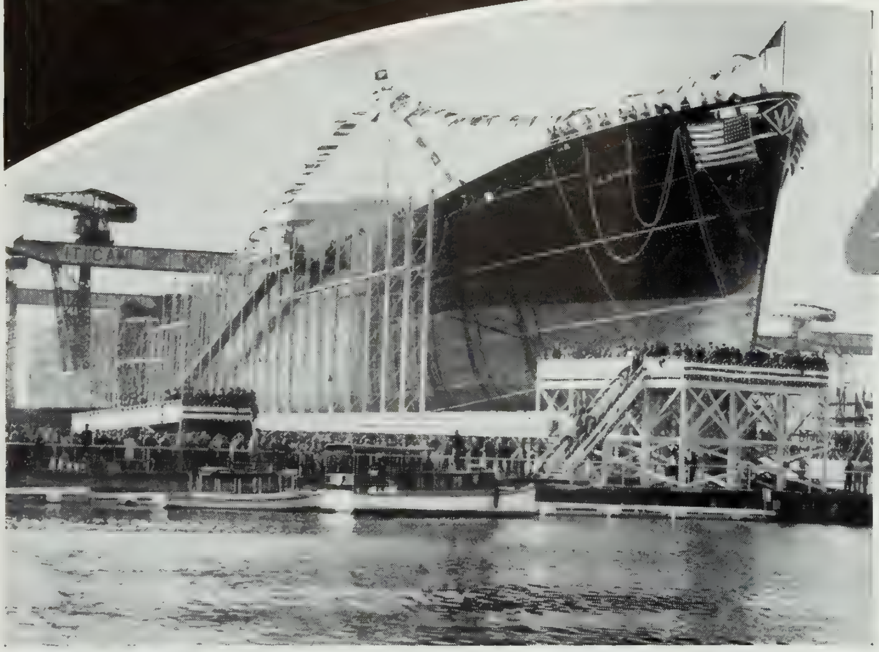

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Pacific MARINE REVIEW

Editorial Comment

California First in Shipbuilding

There is nothing that so warms the heart of a native son of California as to find his state first in any great national endeavor. We were therefore delighted to get recently a compilation from Mr. Lewis Luckenbach, which he was kind enough to give to our reporter after a recent interview. Mr. Luckenbach is president of the American Bureau of Shipping, so the figures are authentic. He gave PACIFIC MARINE REVIEW permission to publish this information—so here it goes.

This compilation is for seagoing merchant ships of 2000 tons gross or over, delivered in each state during calendar years. In 1940, California was near the bottom of the list, having delivered two steamers, aggregating 25,062 deadweight tons; while Pennsylvania was at the top with 12 ships, aggregating 161,171 deadweight tons. The total of vessels in this class delivered by all United States yards was 53, of approximately 600,000 deadweight tons; so California's contribution was approximately four per cent.

In 1941, California's shipyards presented the nation with 20 vessels, having an aggregate deadweight tonnage of 195,912, or 900 per cent increase in number of ships, and nearly 700 per cent increase in deadweight tonnage.

Pennsylvania was second with 12 larger ships, aggregating 195,276 deadweight tons.

Maryland was third with 16 ships, having a deadweight tonnage of 178,021.

New Jersey was fourth with 12 ships and 133,812 deadweight tons.

Virginia ranks fifth, having delivered 9 vessels, aggregating 103,794 deadweight tons.

We are listing these state rankings by deadweight tons as they were given to us. Had we used any other measure, the relative status of the "runners up" might be changed, but California would still be out in the lead.

Sixteen of these twenty vessels delivered by California yards were standard U. S. M. C. ships of the C-1 or the C-3 types. They were:

S.S. Mormacstar, Moore Dry Dock Co., Oakland
S.S. Mormacsea, Moore Dry Dock Co., Oakland
S.S. Mormacsun, Moore Dry Dock Co., Oakland
S.S. Santa Cruz, Bethlehem, San Francisco
S.S. Alcoa Pioneer, Bethlehem, San Francisco
S.S. Alcoa Pilgrim, Bethlehem, San Francisco
S.S. Alcoa Patriot, Bethlehem, San Francisco
S.S. Alcoa Puritan, Bethlehem, San Francisco
M.S. American Manufacturer, Western Pipe and Steel Co., San Francisco
M.S. American Leader, Western Pipe and Steel Co., San Francisco
M.S. American Builder, Western Pipe and Steel Co., San Francisco

M.S. American Press, Western Pipe and Steel Co., San Francisco

M.S. American Packer, Western Pipe and Steel Co., San Francisco

S.S. Aguimonte, Consolidated Steel Corp., Los Angeles

S.S. Agwiprince, Consolidated Steel Corp., Los Angeles

S.S. Alcoa Pennant, Consolidated Steel Corp., Los Angeles

The other four were of the Liberty type, as follows:

S.S. Ocean Vanguard, Todd-California, Richmond

S.S. Ocean Vigil, Todd-California, Richmond

S.S. Ocean Voice, Todd-California, Richmond

S.S. Ocean Venture, Todd-California, Richmond.

Listing them this way allows us to claim that San Francisco Bay shipyards produced more merchant ships in 1941 than did the yards of any state in the Union except California.

> *"The broad oceans, which have been heralded in the past as our protection from attack, have become endless battlefields on which we are constantly being challenged by our enemies."*
>
> Pres. F. D. Roosevelt.

Our Worst Saboteur "General Carelessness"

We Americans are much exercised, and rightly so, these days over the danger of sabotage and fifth column activities. That danger is with us imminent and threatening in these times, and we should use every precaution to guard against its insidious workings.

We should, however, be very objective in our thinking and never forget that there is a very potent saboteur continuously at work among the most loyal of American citizens, a seemingly friendly saboteur, whose genial appeal has won for him an almost honored shrine in the American way of life. For want of a better name, we dub this saboteur "General Carelessness."

He is evident everywhere, and the sum total of his destructive work probably tops in value all the destruction caused by active war.

Two very striking examples in very different realms will serve to illustrate the wide-spread variety and the tremendous consequences of this work of "General Carelessness."

First, the Normandie Fire. We do not know all the answers on this one and probably never will. However, the blame is publicly placed on the carelessness of a workman with an oxyacetylene cutting torch. Undoubtedly, that was the immediate contributing cause of the fire. But what shall we say of the official carelessness that, with zeal for haste, allowed or directed large quantities of combustibles to be left in or delivered to enclosed spaces where oxyacetylene welding and cutting was still in process, and that neglected to maintain fire extinguishing equipment and a trained force to use it?

In this case, "General Carelessness" worked in high officials and in humble workmen so effectively that one of the three finest, largest and most valuable ships in the world, turned over to the United States in good condition, is reduced in two months to a large mass of junk, resting on the bottom of New York Harbor.

Second, "Shipbuilding Terms." This is a nice little book, gotten out by a reputable publisher of technical books. It was compiled by the Educational Department of the State of Alabama, under the supervision of the Federal Office of Education, presumably under a WPA appropriation. It is intended to be a standard textbook in the Defense Training Classes for shipyard workers. Its cost is 50 cents; it will probably be sold by the thousands.

But old "General Carelessness" has gotten in his work. Most of the definitions in this book are inadequate, and many are ridiculous. The impression is given in the introductory remarks that great research was put into this compilation. The truth is that there are several standard glossaries on the market, and that a Webster's Unabridged has much better and more adequate definitions of shipbuilding nomenclature than this book has. "Naval Nomenclature," prepared at Annapolis, and issued by the Superintendent of Public Documents, Washington, D. C., at 15 cents the copy, postpaid, has a more comprehensive list of terms and correct definitions for each term.

But someone will ask, "Why make such a fuss over a 50-cent book?" Our answer is that in point of being an example of the work of "General Carelessness," use of this book may have far more widespread repercussions than the burning of the Normandie.

Beginning with our own thinking and actions, let's spread the doctrine of carefulness. The careless thought-action-word on the part of the most ardent of patriots may be more destructive than the most flagrant of enemy sabotage.

Let's get out from under the careless standard and line up under the slogan of Caremore.

The Auto Industry Rampant

No industry during the past two years has been so representative of modern machine age progress as has been the American automotive industry. It is therefore of great interest to know the remarkable progress now being made by that industry in shifting its plant and personnel to an all-out 100+ per cent on war production.

The following excerpts are from a report, as of February 19, made to the War Production Board by Ernest Kanzler, the chief of its Automotive Branch. We quote:

"The Automotive Branch has divided companies comprising the automobile industries into several groups: Group A, the "Big Three" passenger car manufacturers; Group B, six passenger car manufacturers; Group C, forty-one truck manufacturers; and Group D, the various automotive suppliers in the industry.

"As of January 29, 122 firms out of 152 in Group D reported they had a total of 36,000,000 square feet of floor space, of which 19,000,000 were now occupied by war work. With existing contracts, they will use 24,000,000 square feet. In 1941, at peak automotive production, they employed 173,000 people (94,000 now are on war work, or 54 per cent). When tooling is completed on contracts now on hand, they will employ 154,000, or 89 per cent. The dollar output of these companies, compared with the 1941 monthly peak of $111,000,000 is now running at the rate of $53,000,000 per month, or 48 per cent. When running at full capacity on present war orders, they will produce $116,000,000 per month, or 104 per cent of their 1941 production.

"It is interesting to note that sixty-one of these companies now are employing more people than at their 1941 peak, and fifty of these companies now are turning out more in dollar value per month than during their best month of 1941. This information resulted from a telegraphic survey.

"An analysis of commitments of the Big Three—General Motors, Chrysler, and Ford—shows that when they are producing at full capacity on their present orders, they will be running at the rate of $10,500,000,000 per year. This is at a rate in excess of 250 per cent of what these companies produced in 1941.

"With this great increase in commitments, it is obvious that the Big Three will need help and will have to buy about 40 per cent of this total from outside sources, in addition to doubling their own fabrication. The engineers and production planners of these larger companies require time to digest the contracts placed with them during January. They need time to figure out just what parts should be bought outside. They need time to find out with what companies they can place their subcontracts.

"It is interesting to note that purchase orders placed with suppliers during January, 1942, by the Big Three, for war products, amounted to $545,000,000. The six other automobile companies placed orders for $75,000,000, and other companies placed orders for $133,000,000—making a total of $754,000,000 worth of business placed by these prime contractors with subcontractors during the month of January. It is fair to assume that this rate of orders will continue through February and increase in March.

"During the last half of 1942, the labor load on the industry is going to pick up. Not only will all former workers be recalled, but it will be absolutely necessary to recruit new workers. This becomes more clear each day as employer after employer analyzes his future needs. The armed forces will drain several million men from the ranks of factory workers by the end of 1942.

"Before the automotive industry hits its peak war production schedule, it will need between 800,000 and 1,000,000 workers, compared to 550,000 during peacetime. To maintain round-the-clock production schedules, swing shifts will be necessary. The industry will not get into real production until women are trained and put on war work. More and more women must find their way into essential services as messengers, elevator operators, taxi drivers, in factories, and other occupations which will relieve men workers.

> *"Despite the darkness of the present hour, I have unshakable faith in our people and their capacity to accept the responsibilities which the march of world events has thrown upon them. And when we win, as win we must, we will be a better, stronger people for what we have gone through, and the world will be a better world for the great contribution which we will have made to a decent world order."*
>
> DR. HENRY F. GRADY,
> President, American President Lines.

THE TWO-TON ANCHOR
makes quite a splash

"Calship"

DELIVERS ITS

S. S. JOHN C. FREMONT

On LINCOLN'S BIRTHDAY at 6 a.m. War Time, the Good Liberty steamer John C. Fremont left outfitting dock No. 10 at the California Shipbuilding Corporation, Terminal Island, Los Angeles Harbor, and stood out to sea for her official trials, the first Liberty ship for the U. S. M. C. from a California shipyard.

Aboard were 134 persons, including: 20 in the Deck Department and 15 in the Engine Department operating crews; one officer and fifteen men, as a Navy gun crew; 12 inspectors and trial board, representing U. S. M. C.; 24 technical observers, representing California Shipbuilding Corporation; 14, representing vendors of equipment and machinery; five officials of "Calship"; six representatives of the American President Lines; and eight gentlemen of the press.

With Captain K. J. Olsen on the bridge, they got away promptly at 6 a.m. (War Time, a good hour before sunup), and steamed out to sea. Chief Engineer M. A. Locaty was in charge of the engine room. Cruising along, the first two or three hours were devoted to calibrating compasses and radio direction finder. During this time the non-crew personnel, having been well fortified by a good breakfast, were able to enjoy the beautiful spectacle of the sun rising over the Sierra Madre Mountains and lighting up the dark orange

LIBERTY SHIPS are good sturdy cargo vessels with large capacity and long cruising radius. Ideal for convoy service. They are coming off the ways in ever increasing numbers and soon will be up to the goal of three a day from American yards

FIRST "LIBERTY" PASSES ALL TESTS

foothills and valleys of Southern California.

As soon as the navigation instrument experts were finished with the adjustments, John C. Fremont was headed out to sea. Power was gradually built up to capacity. Indicator cards were taken every 10 minutes, and the necessary adjustments to valve cut off were made so that the big triple-expansion reciprocating steam engine would be properly balanced in power delivery from each cylinder.

This accomplished, with her engines showing an output of 2500 ihp, she was put into her six-hour full-speed endurance run.

During this run, all machinery on the ship is inspected and tested. The Babcock and Wilcox water tube boilers, their oil burners, oil service pumps, oil transfer pumps, injectors, feed water pumps, soot blowers, superheaters, induced draft blowers, gages, evaporator, distiller, feed water heaters, superheaters, and all other attachments and service auxiliaries are carefully watched with readings every 30 minutes or oftener.

The main engines, built by the Joshua Hendy Co. of Sunnyvale, California, were very carefully watched in their performance. Such main engine auxiliaries as lubricators, indicator gear, turning gear, bearings, crosshead guides, piston rod packing, condenser, circulating and condensate pumps, the Kingsbury thrust bearing, and many other items were under constant inspection and test.

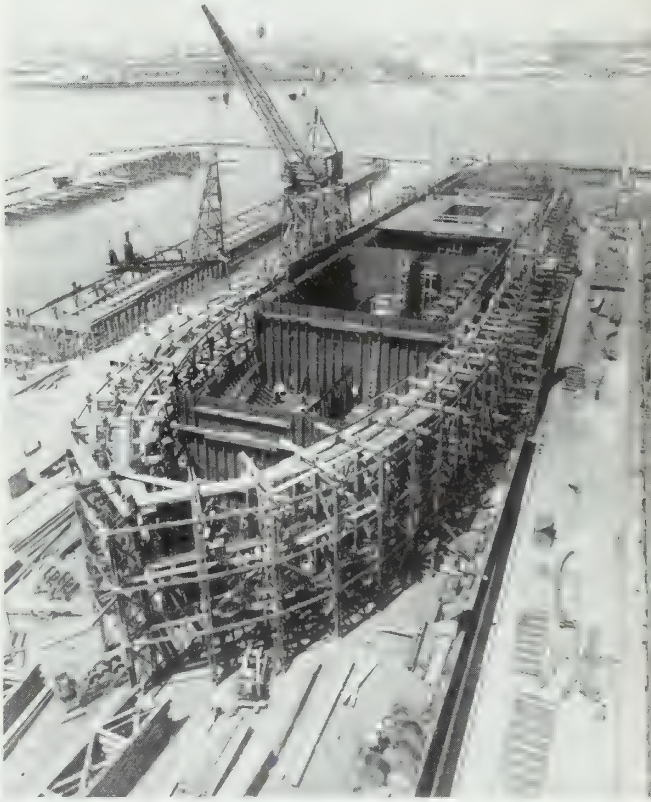
Steam conditions on these ships are 200 psi, 440° F. total temperature at engine throttle. The condensers are designed to maintain a vacuum of 26"

Progress on a Liberty Ship at the "Calship" Yard

TOP: Keel for S. S. John C. Fremont is laid on May 24, 1941

CENTER: Ship in frame and partially plated, August 16, 1941

BOTTOM: John C. Fremont launched September 27, 1941, just four months after keel laying



Inspection

CAPTAIN K. J. OLSON and a group of crew members and trial board experts on deck of S. S. John C. Fremont

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A GROUP OF EXAMINERS inspect the cargo handling gear and the steam cargo winches

●

A. O. PEGG (outfitting manager for California Shipbuilding Corporation) and a group of engineers inspect the ship's windlass

Hg. when supplied with circulating water at 80° F.

Worthington pumps service the condenser and the boilers, and are used for the general service of the ship. All machinery on deck and in engine room is driven by steam engines, and, although the engine room crew list showed only one Mc (2nd Asst. W. McDonald), every reciprocator worked smoothly and responded promptly to every call.

There will be identical ships being tried and delivered by "Calship" every four or five days on an average from now till the end of 1943, but this first job was, of course, a special occasion, and "Calship" is to be congratulated on the smooth performance of this, their first, steamer.

The schedule of tests and trials was prepared by and carried out under the supervision of W. C. Ryan, chief engineer, California Shipbuilding Corporation ("Calship").

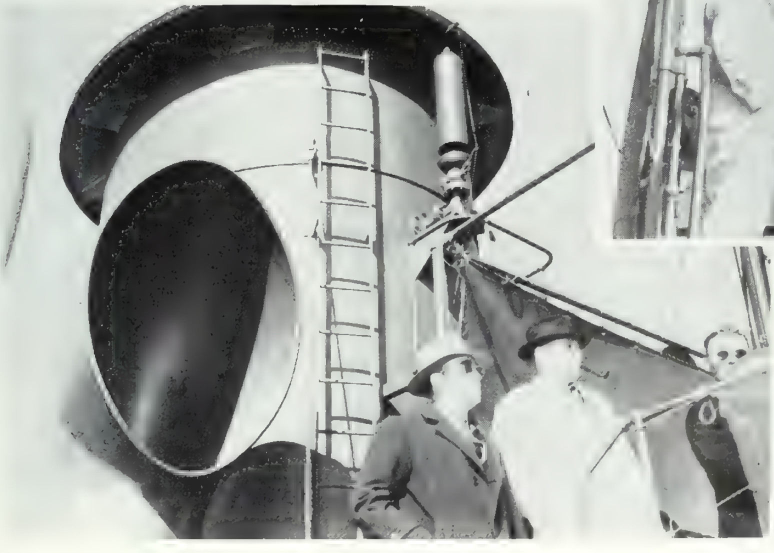
The operation under test of all machinery and equipment was under the supervision and direction of A. O. Pegg, outfitting manager of "Calship."

Berthing and messing of all personnel aboard was supervised by J. H. Wadsworth, industrial relations mana-

TESTING DAVITS AND LIFEBOAT GEAR

Sometimes the lives of the crew depend on the speed and efficiency of this operation

AT RIGHT: A group of officials on the top of pilot house. Jerome K. Doolan, general manager, California Shipbuilding Corp., is framed in the loop of radio-direction finder



AT LEFT: Mr. Jerome K. Doolan and Mr. Geo. Fenton, Senior Hull Inspector, U. S. M. C., with a back drop of stack, whistle and ventilating cowls

PAUSING FOR MESS on the day's run, members of the trial examiner's crew are shown in photo. Left to right, on the left side of the table, are E. R. Stigen, naval architect and member of the U. S. Maritime Commission Trial Board; Paul Faulkner, of Pacific Marine Review; Jerome K. Doolan, general manager of California Shipbuilding Corp.; and Gilbert Nuse, of Gibbs and Cox

ger of "Calship," and for the duration of the trials Chief Purser of S. S. John C. Fremont.

At the close of the day, the good ship came sweeping into the El Cerritos channel and up to her outfitting dock with a broom at her truck, the old symbol of success in sea trials. She had made a clean sweep in all of her tests, and the happy spirit of the ship's company coming ashore testified eloquently to the efficient and adequate preparations for the trip made by Chief Purser Wadsworth.

Prominent among those aboard were:

U. S. M. C. Trial Board: J. W. Massenburg, senior member, trial board; A. B. Cecil, marine engineer; E. R. Stigen, naval architect; T. J. Tiernan, trial engineer.

U. S. M. C. Inspectors: David Currier, chief inspector, Pacific Coast; H. B. Taylor, machinery coordinator, Pacific Coast; James Stewart, principal hull inspector; G. F. Staub, principal machinery inspector; Henry C. Acker, purchase controller; George Fenton, senior hull inspector; N. M. Gaskell, machinery inspector; Henry Stern, machinery inspector.

"Calship" Officials: Jerome K. Doolan, general manager; John Byrne, production control manager; W. C. Ryan, chief engineer; A. O. Pegg, outfitting manager; J. H. Wadsworth, industrial relations manager.

American Bureau: Charles J. L. Schoefer.

Bureau Marine Inspection: Captain James Balderson, hull inspector; and James Wall, boiler inspector.

Gibbs & Cox: G. Nuse and F. Carnes.

American President Lines: Captain M. Olsen, chief; Clarence Irwin, chief officer; E. C. Dumouchelle; J. Bullock; P. O. Berkhoel.

Mackay Radio: F. E. Beaulieu and I. R. Colbert.

Worthington: J. P. MacArthur, J. P. Harris, and J. B. McKilvey.

Babcock & Wilcox: R. H. Tillman.

Submarine Signal: J. L. Lovett and W. C. Grove.

Carrier Engineering: Ralph E. Manns.

Globe Nautical: Captain A. Knutson and Don Lynn.

Joshua Hendy: J. Clarke.

General Machinery: J. F. Brown.

The Press: Paul Faulkner, PACIFIC MARINE REVIEW; Chas. Crawford, Los Angeles *Times;* Dave Gershon, Los Angeles *Examiner;* Brooks Barnes, Los Angeles *Daily News;* Wm. Conway, Long Beach *Press-Telegram;* Edsel Newton, San Pedro *News-Pilot;* and Cal Wood, *The Log.*

ONE OF THE HITS on launching programs is this "Calship" shipfitters' quartette. Left to right, Robert Wershing, Clarence Green, William de la Cour, and Ralph Reese

A NEW BROOM is hoisted to the masthead, signifying that the good ship John C. Fremont has successfully met all tests imposed by U. S. M. C.

●

●

THE BRIDGE OF JOHN C. FREMONT signals to the escorting Coast Guard vessel that the trials are over and she is ready to return to her dock

A Streamlined Trio

Moore Dry Dock Building Three U.S.M.C. Cargo-Passenger Liners for Alcoa Steamship Company

THREE CARGO-passenger liners nearing completion at Moore Dry Dock Co.'s yard, Oakland, California, are notable in that they are the first of the streamlined modern motorships from the designs of Geo. G. Sharp, New York naval architect, that have been built in a Pacific Coast shipyard. All three were launched during 1941, the dates being October 21, December 4 and December 30. They were christened, respectively, Alcoa Courier, Alcoa Corsair, and Alcoa Cruiser, and are designed and arranged primarily for the Central and South American trade of the Alcoa S. S. Company, taking out general cargo and passengers, bringing back bauxite ore and passengers.

Of a modified C-2 type, designated by the U. S. Maritime Commission as the C-2-S1-A1, the hulls of these vessels are built to the highest class of the American Bureau, and their machinery and equipment conform to the rules of all the governing Federal inspection agencies.

The principal characteristics are shown in the table herewith.

This table indicates that these hulls are 15 feet shorter, one foot narrower, and 18 inches deeper than the standard C-2 type hull, and that they have 100 tons larger gross measurement, and are provided with 60 per cent more horsepower and a correspondingly higher sea speed.

As vessels with these characteristics are much in demand just now by the Army and Navy, it is felt that they will be taken over as soon as completed.

Propulsion Plant

The propulsion machinery comprises two Foster Wheeler marine type water tube steam generators delivering steam at 450 lbs. psi and 750° F. to a General Electric cross-compound steam turbine that transmits its power through General Electric double-reduction, mechanical gearing to a single propeller shaft, and develops 8500 shp when the propeller is turning 90 rpm.

The boilers and the turbine are housed in one machinery space with the boilers aft of the turbine and above the propeller shaft and the gear casing. They are equipped with the Todd variable capacity oil burners; and are fitted with Diamond soot blowers; Eye-Hye gage glasses; Sturtevant induced draft fans; Quimby fuel oil service pumps; Manning, Maxwell & Moore injector; Taylor thermometers; C. M. Bailey flue gas analysis set; Hagan combustion control; Mason-Neilan feed water control, and a feed water testing outfit by Bull & Roberts.

As is customary, the low-pressure unit of the turbine exhausts directly into the condenser, which in these ships is a Worthington. A Worthington air ejector with inter and after condenser, and a Worthington condensate pump together maintain the vacuum and transfer the condensate to the feed water system.

A big Worthington centrifugal supplies the tubes of the condensate with ample sea water for cooling the exhaust. The condensate pump pushes the condensate or feed water through a Davis first-stage heater to the Worthington deaerating heater and hot well, which is mounted high enough to give ample positive suction head on the main feed pump. This pump (a Worthington) delivers the feed through a third-stage heater to the boilers.

This propulsion plant has a continuous capacity for 10 per cent over normal load and a two-hour capacity for 25 per cent above normal, so that, if necessary, on sudden spurts, it can deliver 10,625 shp. With this power plant, these hulls should easily maintain between 19 and 20 knots.

It will be noted that this is the standard U. S. M. C. steam turbine plant for the C-3 type cargo carrier, a much larger vessel than the C-2-S1-A1 type.

Passenger Accommodations

The passenger accommodations on the Alcoa Courier and her two sisters accentuate comfort in the modern motif. The Geo. G. Sharp organization have become masters of line, proportion and color in their application to marine interiors.

CHARACTERISTICS

Length	**420 feet**
Beam molded	**62 feet**
Depth molded	**33 feet**
Gross measure	**7500 tons**
Propulsion power	**8500 shp**

Public rooms on these ships are spacious, well lighted and ventilated apartments, all located on the superstructures. The illustrations of lounge and of staterooms show graphically the simplicity and beauty of the interior decorative treatment.

All staterooms have private bath or shower. All rooms have adequate indirect lighting.

The galleys, pantries and dining saloon are completely equipped with the most modern culinary and table service fittings.

All public rooms and sleeping quarters are under a system of ventilation and heating that automatically keeps the air at correct, healthful condition. Carrier refrigeration units serve this air conditioning system and the refrigeration chambers for the ship's stores and cargo.

All the joiner work in the accommodations is by Hopeman Brothers. Kearfott Engineering Company supplied the special windows in the public rooms and the staterooms, and also the casement doors and screens.

Deck Machinery

Cargo winches, warping winches and windlass are of the electric drive geared type, supplied by the American Hoist & Derrick Company. Anchors were supplied by C. J. Hendry Co. of San Francisco, and the anchor chains by the National Malleable and Steel Castings Co.

The steering gear is the well-known American Engineering Co. hydro-electric equipment with hydraulic and electric telemotor connection to the steering stations.

All boats are handled on Welin davits, served by Welin boat winches.

Electric Plant

All auxiliary machinery and all cooking on these ships are electrical. All the deck machinery is driven by General Electric motors. Practically all engine room auxiliaries are driven by Westinghouse motors.

The steam turbo generating sets are General Electric and work under the same steam conditions as the main turbines. The generators produce 3120-

Artist's conception of profile of Alcoa Courier

Staterooms

These illustrations of the staterooms of the Alcoa trio of cargo-passenger liners, now building at the Oakland yard of Moore Dry Dock Co., were made from the model staterooms set up in New York by Geo. G. Sharp, the designing naval architect

Artist's conception of the lounge of S. S. Alcoa Courier

240 volt current, which is distributed through a General Electric main switchboard to the various light, power and culinary circuits.

For emergency purposes, a "Caterpillar" diesel-General Electric generator set is installed, which is automatically started whenever the voltage on the main generators for any reason reaches a predetermined low. This emergency generating set, located on the bridge deck, takes care of certain light and power circuits in any emergency.

The bridge and pilot house of the Alcoa Courier and her sisters will be equipped with all the most modern devices necessary to navigation.

Prominent among these are the usual items from the Sperry Gyroscope Company, including:

Master Gyro compass and compass repeaters; Gyro pilot; and Gyro Course Recorder.

Submarine Signal Co. installed the Fathometer echo sounding apparatus.

A. Lietz of San Francisco are responsible for the electric sounding machine.

An electric rudder angle indicator was provided by the Henschel Corporation.

The smoke detection cabinet in the pilot house and the carbon dioxide fire extinguisher system were installed by the C-O-Two Fire Equipment Company.

There are many novel features and details of construction and design built into these streamlined ocean greyhounds, but for obvious reasons we cannot fully describe and discuss ships that are to be in the "all-out war" on the Pacific Ocean.

The Geo. C. Sharp organization and the Moore Dry Dock Co. are to be congratulated on the design and construction of these beautiful hulls and on the arrangement and installation of their effective and efficient machinery and equipment.

Yachts

Given to United States

Twenty-three American yachts, formerly pleasure craft of some of the nation's widely-known citizens, are now engaged in the grim tasks of war, gifts by their former owners to the Navy, the Coast Guard, or the Maritime Commission's training service.

These yachts, now converted for their wartime service to the nation, are performing many vital and important functions. Some are engaged in submarine detection and chasing, others as patrol craft for the Navy and the Coast Guard, and one or two of the larger yachts carry complete weather observation equipment. Still others are serving as training vessels, giving valuable experience to thousands of men.

Valued at several millions of dollars, these fast craft make the finest auxiliaries for coastal protection work. Through their gifts, the donors have made it possible for the Navy and Coast Guard to convert cutters, previously employed in coastal work, to gunboats to join the combat forces.

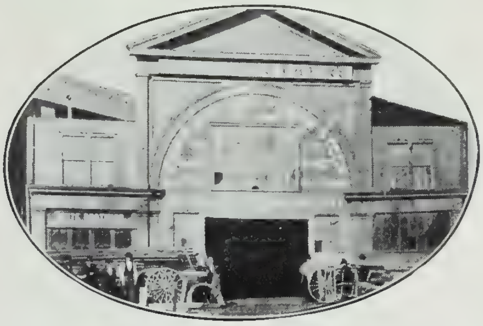
The honor roll of yachts and their donors follows:

TO THE NAVY: Alva, W. K. Vanderbilt, New York; **Edmar,** Major Edward Bowes, New York; **Intrepid,** W. P. Murphy, Chicago; **Gypsy,** Robert F. Herrick, Boston; **Savitar,** Joseph H. Seaman, New York; **Katoura,** Alfred Loomis, New York; **Caroline,** Leo Spitz, Chicago; **Cheng Ho,** Mrs. A. E. Archbold, Washington, D. C.; **Marionette,** John N. Matthews, New York; **Now Listen,** Arthur Lehman, New York; **Seventeen,** Sinclair G. Stanley, Chicago; **Sea Otter,** H. W. Cannon, New York, and **Truant,** Henry Ford, Dearborn, Michigan.

TO THE COAST GUARD: Alimar, J. J. Ryan, New York; **Joseph Conrad II,** Huntington Hartford, New York; **Sea Cloud,** Joseph E. Davies, Washington, D. C.; **Broadwater,** R. R. M. Carpenter, Wilmington, Delaware; **Jo Ann II,** Joseph Freeman, Brooklyn; **Atlantic,** Gerard B. Lambert, New York; and **Innisfail,** Gerard C. Smith, New York.

TO THE MARITIME TRAINING SERVICE: Vema, Mr. and Mrs. G. Unger Vetlesen, New York; **Nenemoosha,** Mrs. Jesse Ball du Pont, Wilmington, Delaware; and **Sea Love,** Innis O'Rourke, New York.

Hardwood Headquarters for . . . . 70 YEARS



IN THIS FORMER street car terminal and car barn at the Market Street - California Street gore in 1872, the firm of White Brothers served San Francisco with hardwood lumber

WHITE BROTHERS of San Francisco are this year celebrating their 70th anniversary.

This pioneer San Francisco hardwood lumber firm was founded by Asa L. White and Peter White in 1872.

Peter White was almost a 49'er, having come to the Golden Gate in 1852 at the age of 18. He had learned the wagon maker trade, and found work readily in the young and growing metropolis of the Pacific Coast. Peter saved his money and watched his opportunities, and by 1868 had become the head of a business supplying materials and hardware to the blacksmiths and vehicle makers of that period. In that year, Asa L. White came to California, and in 1872 the two became associated as White Brothers (hardwood lumber and wagon materials) and moved to larger premises on Market Street, running through to California Street. It is an interesting historical side light that the building first occupied by this firm had been the downtown terminal station of the old steam dummy that ran on Market Street from the Ferry to Valencia Street junction.

The young firm expanded steadily with the growth of the State of California, and built solidly with its expansion. Three moves were necessary to provide more room for offices and stocks. First, they went to a Main Street site; then to the corner of Spear and Howard streets in 1887; and finally, in 1909, to Fifth and Brannan streets, their present location. In 1928 they established an East Bay yard on High Street, Oakland.

Both of the founders have passed on, and the business is being carried on by the second generation. William T. White, son of Asa L. White, is president. C. Harry White, nephew of Peter White and of Asa L. White, is vice president and general manager.

Don F. White, son of Harry C. White, is assistant manager. Other officials in the firm are: M. Johnson, secretary and treasurer; John A. Howall, sales manager, 34 years with the firm; Jack Howley, superintendent, San Francisco yard, and an employee for 20 years; Walter Herkenham, manager of the Oakland yard; and Bill Meyer, who has been with White Brothers since 1916, and is sort of ambassador without portfolio, working on a roving commission to sell White Brothers and White Brothers' products.

In their long history, White Brothers have made vital and lasting contact with the sources of supplies of hardwoods all over the world. From their office in San Francisco, lines of trade go out to Central America, Mexico, Brazil, Australia, Siam, Africa, Great Britain, Canada, the Philippines, Spain, the New England states, and the Gulf states. They are the largest hardware suppliers on the Pacific Coast. Their long experience, ample stocks, and financial stability enable them to handle any hardwood problem promptly, efficiently, and to the advantage of the customer.

Here's an anniversary greeting to the hardwood headquarters of the Pacific Coast, and may their second seventy years be as White and their first seventy.

HERE AT FIFTH and Brannan streets, the San Francisco yard of White Brothers has maintained Western headquarters for hardwoods since 1909

LOAD CENTER POWER DISTRIBUTION

An Interesting Method For Improving Performance At Lower Installation and Maintenance Cost and With Large Savings in Vital Defense Materials

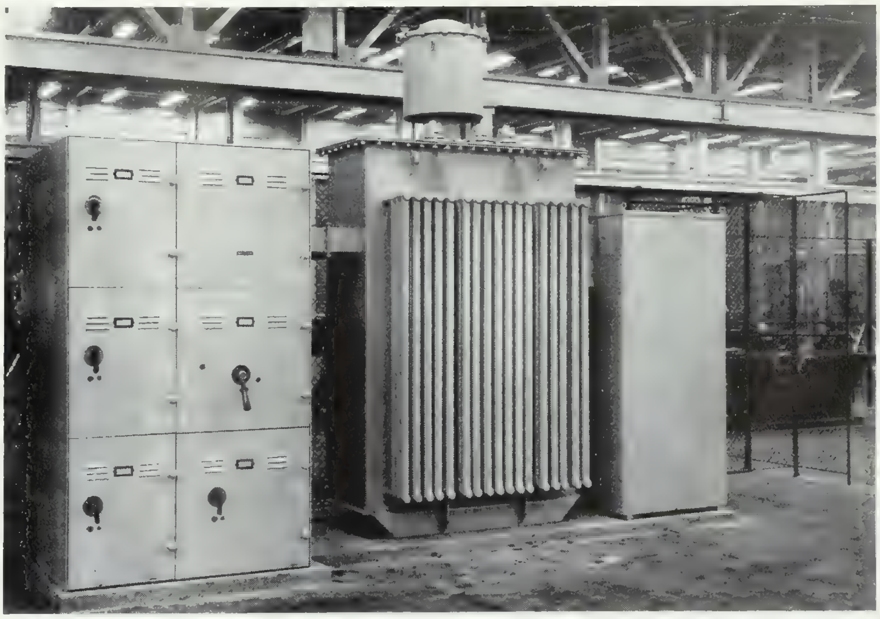
The subdivision of electric power has occupied the minds of electrical engineers from the first moment when this most interesting laboratory phenomenon first began to be a practical servant of man kind.

Edison's incandescent lamp became a practical success not so much because of the excellence of the lamp, but because the Wizard of Menlo Park had discovered a method of subdividing a power circuit and maintaining a constant voltage in every part of that circuit.

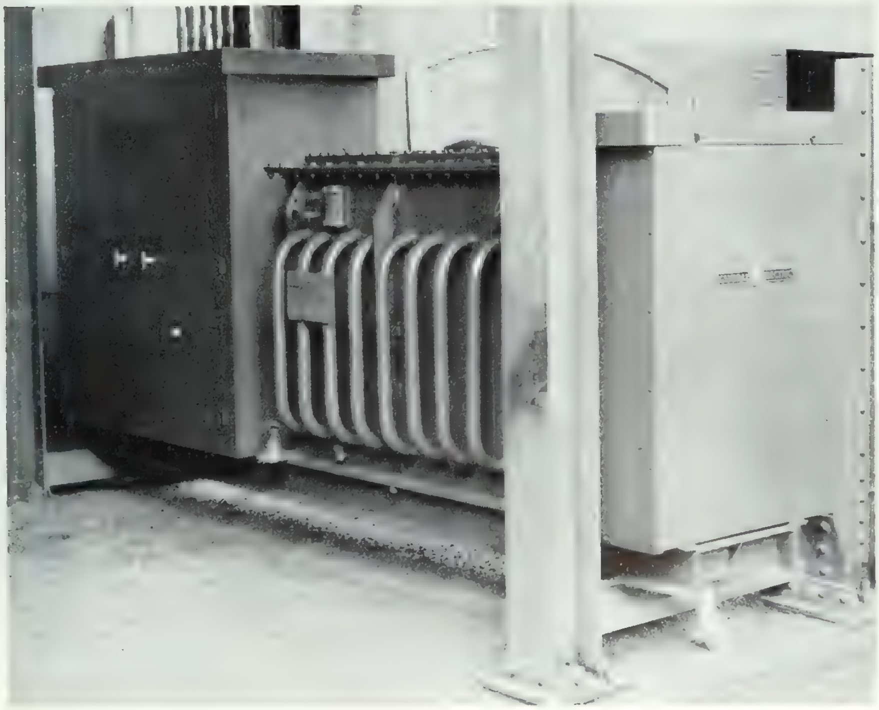
Even in the days of direct current and low voltage, there was much design work done on power circuits and an arrangement of machinery in manufacturing plants to obtain the most economical use of copper conductors and applications of power.

With the coming of alternating current and high-voltage transmission, the location of substations is carefully figured to give the shortest possible low-voltage power loads and so save copper and other materials.

Today, the emphasis on saving metal for war purposes is bringing a further step. This is the transmission of electric power at line voltage directly to the center or centers of load in a manufacturing plant, and there feeding it to a compact unit substation, consisting of high-voltage switch gear, step-down transformer and low-voltage switch gear.



LOAD CENTER unit substation, 1000 kva, 2400 to 480 volts, installed on shop floor



150-KVA LOAD CENTER unit substation installed out of doors

This substation, as now manufactured by the General Electric Company, is shipped in sections ready to be installed either inside a building or with a weather-proof housing, outdoors. Our illustrations show several applications of these units.

It is estimated that a plant with a power demand of 3000 kva used at 480 volts and supplied at 13,200 volts, by the use of a properly designed load-center power distribution system instead of the conventional central substation, low-voltage distribution can save 7800 lbs. of steel, 11,500 lbs. of copper, 1300 lbs. of other materials. With this saving in material, there is also a saving in installation, time and cost, and a very decided improvement in voltage regulation and in performance.

LOS ANGELES PLANT, Axelson Manufacturing Company

A Golden Anniversary

Noted Pump and Tool Builders Review Progress for a Half-Century of Life and Labor

AXELSON MANUFACTURING Company of Los Angeles is this year celebrating its golden anniversary.

As pioneer of a number of design improvements in pumps, sucker rods, and other requisites of the petroleum industry, Axelson possesses a most interesting history. In 1892, on an original capital investment of $1,200, scrimped from wages, a small iron works in the then country town of Santa Ana, California, was purchased by two Axelson brothers—C. F., a machinist, and G. A., a molder.

Today, the sons of these founders, carrying along the unique research methods and production standards which originally distinguished the Axelsons, are operating a company whose scope of oil field service is literally described in their paraphrased slogan: "The sun never sets on Axelson pumps and sucker rods," and whose annual sales volume tops $6,000,000.

In 1942 the Axelson foundries, machine shops, and assembly lines are supplying American war industry—for the second time—with essential production and maintenance equipment. Developed during World War I, Axelson's well-established line of machine tools, heavy duty lathes and acces-

THE PICTURE ABOVE shows the small Acme Iron Works in the then country town of Santa Ana. This shop, bought by the Axelson Brothers in 1892, formed the start of a manufacturing firm whose products are used throughout the world

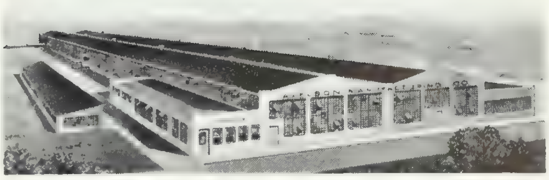
J. C. AXELSON
President and General Manager

J. C. Axelson (left) and D. F. Axelson (right) are now heading this business which their fathers started. This year, the firm is celebrating its Golden Anniversary with a larger volume of products going out of its great plants than ever before in its history

D. F. AXELSON
Vice President

LEFT: In 1898, the Axelson Mach. Co. moved into this plant in Los Angeles

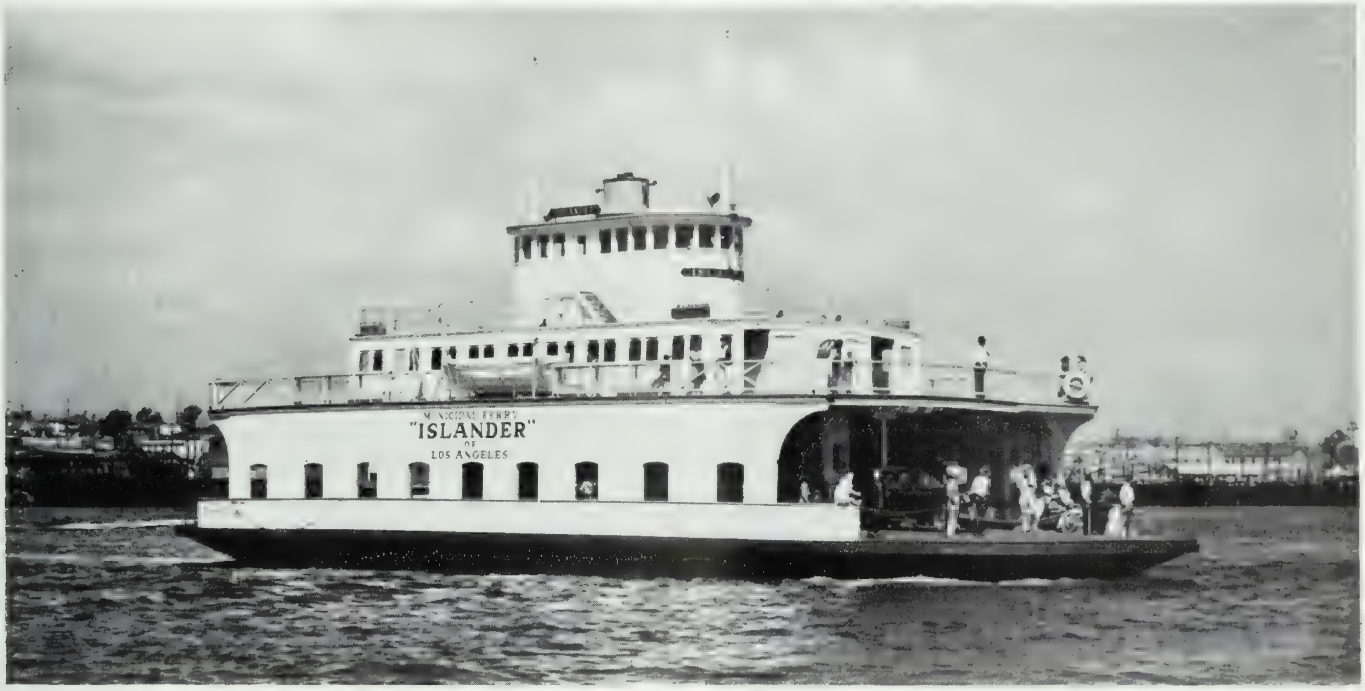
RIGHT: The St. Louis, Mo., plant



sories are under all-out production to supply America's 1942 Victory Program in manufacturing plants and shipyards. Pumps, sucker rods, gages, and numerous other oil field supplies are essential to our "Keep 'em Pumping" oil program.

Simultaneously, the company this year will produce a large volume of aviation parts for Allied warplanes.

"As we enter our second half century of operation," states J. C. Axelson, president and general manager, "we are answering the Nation's challenge with maximum production without sacrifice of precision and quality standards. We see one obligation above all others: Wherever pumps are lifting oil for America's Victory, we'll help 'Keep 'em Pumping!' "



LOS ANGELES MUNICIPAL FERRY ISLANDER, formerly Mercer, nee Vashon Island, is the first diesel-drive ferry in the United States

First Atlas Marine Diesel in First Diesel-Drive Ferry Still Gives Good Service

ATLAS IMPERIAL Diesel Engine Company of Oakland, California, has a notable record for building internal combustion engines of the marine, heavy-duty type that perform under all emergencies with great reliability and good economy.

Their first diesel was built in 1914. It was a four-cycle, six-cylinder, 11½-inch by 14-inch, 250-bhp, air-injection model, with a normal speed of 250 rpm, and was intended for power plant duty at an Arizona mine. World War I interrupted the financial plans, and in early 1916 this engine was equipped with a one-way clutch at each end and was installed as the propulsion plant of the Puget Sound ferry Vashon Island, then building at Seattle for Kings County, Washington.

This ferry, since renamed Mercer, is the first diesel ferry to be built in the United States, and is still operating with her original engine, which in 1928 was altered from the air-injection system to the present Atlas airless (or solid) fuel injection system.

On September 1, 1941, the Mercer was sold to Los Angeles interests and renamed Islander. She is now on war service, ferrying shipyard workers to the shipbuilding plants on Terminal Island, Los Angeles-Long Beach Harbor.

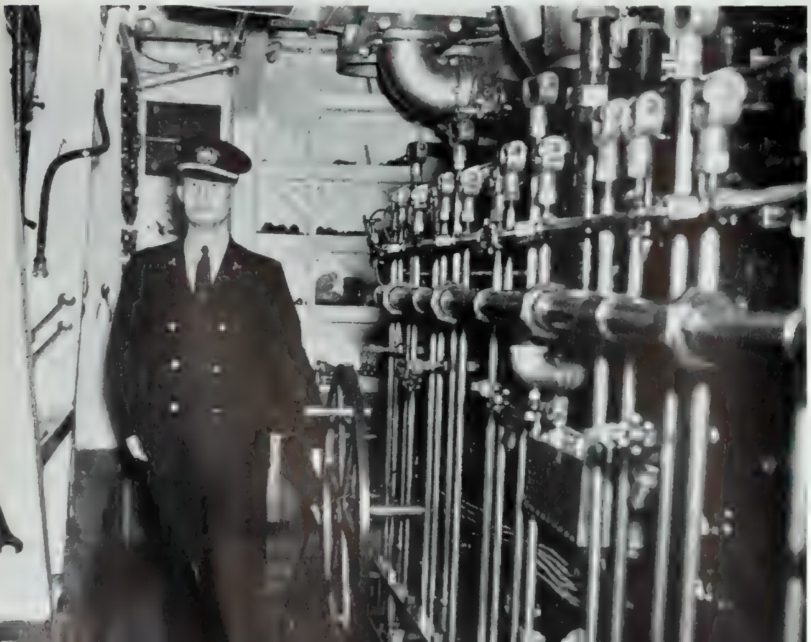
Islander is a wooden hull with an overall length of 130.5 feet, a beam of 36 feet, and a draft of eight feet. She has an original designed capacity for 200 passengers and 15 teams; or 33 Model T Ford cars. Her speed was 8.5 knots, and she used 12 gallons of fuel an hour.

Her engines have been at work during the past 25 years, and have piled up a record of approximately 80,000 hours, or 700,000 miles travel, or 28 times round the earth at the Equator.

The hull has been altered and strengthened twice and her auto and passenger capacity greatly increased, but her original engine, with the replacement of a few parts, still delivers 250 bhp steadily, and with first-class diesel economy.

As the Islander, this ferry went into service between San Pedro and Terminal Island at 6 a.m., September 2, 1941. She ran continuously on 24-hour service until November 1 and, since that date, has been running on a 17-hour-a-day service. In September, she carried 240,216 passengers (exclusive of autos), and, in October, she carried 295,794 passengers, and is now carrying at that rate.

The rebuilding of ferry Islander for her present operation was under the supervision of E. C. Earle, Chief Engineer, Los Angeles Harbor Department.



ENGINE ROOM of ferry Islander, featuring the operating side of her 250-bhp Atlas Imperial diesel engine

Marine Commission Increases Imports

Imports of ten important raw materials vitally necessary to the nation's war production effort rose to six and a half million tons in 1941, as compared to two and a quarter million tons in 1938.

This increase of approximately 200 per cent was achieved by cooperative action of United States Maritime Commission through its Division of Emergency Shipping and the ship operators, despite withdrawals of foreign-flag vessels from vital trade routes and the allocation of a large amount of tonnage of United States registry to the Army and Navy.

In the last six months of 1941, imports of these ten commodities were larger than for each of the years, 1938 and 1939, and almost as large as for the entire year 1940.

The percentage increase for 1941, compared to 1938, follows: Bauxite, 195%; chrome, 240%; copper, 205%; cork, 103%; graphite, 693%; mica, 88%; manganese, 136%; rubber, 145%; tin, 279%; and wool, 853%.

In 1938 these ten commodities comprised 11 per cent of the total dry cargo imports into the United States. In 1940 they formed 15 per cent of the total, while in 1941 they made up approximately 23 per cent of dry cargo imports.

The transportation of these commodities, with the exception of bauxite, involves long ocean hauls. Even before the entry of the United States into the war last December, the bringing of basic commodities from such far-distant areas was beset with difficulties.

The monthly rate of import for the last six months of 1941 exceeded by 45,000 tons the monthly rate estimated by the Office of Production Management as necessary to our war effort.

Skilled and experienced expediters or "trouble shooters," representing the Maritime Commission in key foreign ports, where strategic raw materials are loaded, contributed substantially to the increase in tonnage of the ten basic commodities. They are just what the name implies. They supervise the assembly of raw materials at the docks ready for loading. They help to bring about fast loading, with due regard for economies of space.

The Commission is now sending additional "trouble shooters" to other key ports to speed up further movement of materials for war production needs.

Wage Payments To Interned Seamen

The Maritime War Emergency Board announced on January 27 the procedure shipowners or operators will follow in respect to payments of salaries to seamen of the United States Merchant Marine while they are interned in a foreign country or have lost their ships, and are awaiting return to the United States, providing their situation is the result of enemy action.

The action is retroactive to December 7.

The Board's announcement said that careful consideration had been given current war conditions at sea and existing collective bargaining agreements before the procedure was decided upon.

The decision also outlined the procedure that shipowners or operators should follow regarding voluntary allotments of both licensed and unlicensed personnel to properly designated persons or institutions.

Payments will be continued only until the seaman or officer has been returned to the continental United States and, in no event, longer than a period of three months after the war has ended.

Consolidated Delivers Alcoa Polaris

DRESSED IN HER NEW coat of gray war paint and mounting a deadly-looking gun, the SS Alcoa Polaris steamed into Los Angeles Harbor the first week in February after the successful completion of her sea trials.

The fourth of a series of C-1 cargo-and-passenger vessels which Consolidated Steel Corporation, Ltd., is building for the United States Maritime Commission, she was classed by Maritime Commission officials as "the best of the four ships which have so far rolled off the line." Traditionally, a broom was hoisted to her foremast as she came into port, indicating that she had more than fulfilled the exacting requirements demanded by the trials, which included steering gear tests, anchor tests, overload tests, and economy runs.

Alcoa Polaris is a sister ship to the previously delivered Agwimonte, Agwiprince and Alcoa Pennant. She is 417 feet long, has a beam of 60 feet, and a molded depth of 37 feet six inches. Her displacement is 12,900 tons. There are five cargo holds with a capacity of 8000 tons. Comfortable accommodations for twelve passengers are arranged in four decks on the boat deck. Each of these rooms has a private bathroom adjoining.

The propulsion machinery of Alcoa Polaris comprises two Babcock and Wilcox water tube boilers, burning fuel oil under Bailey combustion control, fitted with Diamond soot blowers, and supplying steam at 450 psi and 750° F. to a Westinghouse cross-compound, double-reduction geared turbine, which develops 4000 shp at the normal propeller speed of 90 rpm, for a designed ship speed of 14 knots fully loaded under average sea conditions.

Auxiliary power is furnished by two Westinghouse 250-kw turbo generating sets, and emergency light and power by a Buda (diesel)-General Electric 15-kw set.

Cargo - handling winches, anchor windlass, and warping winches were supplied by American Hoist & Derrick, and are driven by Westinghouse motors. Steering gear is by Lidgerwood. Doran supplied the propeller; Worthington, the pumps; Sturtevant, fans and blowers; York, the refrigeration equipment; C-O-Two, the smoke detection and fire extinguishing equipment; Welin, the davits and lifeboats; Kearfott, the special windows and wipers; National Malleable, the anchor chain; Exide, the batteries; and Edison-General Electric, the galley equipment. Many other firms participated in making this fine steamer complete.

She was launched on "Liberty Fleet Day," September 27, 1941, when fourteen ships were launched throughout the country to emphasize the magnitude of the United States Maritime Commission's long-range program.

The following prominent persons were among the more than 120 passengers who were aboard during the sea trials:

Lloyd R. Earl, vice president in charge of production for Consolidated Steel Corporation, Ltd.; **J. W. Massenburg** of San Francisco, Senior Member of the Trial Board, Pacific Coast, Maritime Commission; **A. B. Cecil** of San Francisco, member, Pacific Coast Trial Board, Maritime Commission; **D. G. Warren** of New York City, naval architect; **L. R. Sanford** of Washington, D. C., Chief of Inspection Section of the United States Maritime Commission; **M. W. Jackson** of San Francisco, Electrical Coordinator; **E. C. Humphrey** of San Francisco, Hull Coordinator; **H. B. Taylor** of San Francisco, Machinery Coordinator, and **Ensign L. L. de Latour,** in charge of the gun crew. **Captain A. T. Ostrander** was Master of Alcoa Polaris on her trials. **A. C. Nicholson** was in charge of all tests and trials during the run. Also aboard were representatives of the American Bureau of Shipping, and the Bureau of Marine Inspection and Navigation.

News FROM THE PACIFIC NORTHWEST

by Daniel L. Pratt

Shipbuilding Boom In Northwest

The Pacific Northwest received a generous proportion of the contracts placed for new ships by the Maritime Commission during January. Oregon, especially, was fortunate in getting orders running into many millions.

Largest of these was an order for 88 more Liberty ships to the **Oregon Shipbuilding Corporation,** and an allotment for considerable plant expansion. Another was for the new affiliated concern, which is building an 8-way yard in Vancouver, under a $12,000,000 plant award and backed by contracts for 65 Liberty ships.

Contracts for fourteen coastal mine sweepers were awarded to the **Willamette Iron & Steel Co.** and also for fifty-six more Liberty type reciprocating engines, bringing the total of engines ordered for this concern to 127 units.

The Albina Engine & Machine Works received an order for six more sub-chasers, and it is understood this order will be increased when the small tonnage bill awards are made under legislation now pending in Congress.

Anticipating further orders, work is going ahead on a big enlargement that will give the **Seattle-Tacoma Shipbuilding plant No. 1,** at Tacoma, three more outfitting ways. Other orders are expected to be placed in Seattle soon, though the greatest activity there is in building naval vessels, and in expanding naval sea terminal facilities.

Navy Takes Over Smith Cove Terminals

The U. S. Navy early in February took over the huge Seattle Port Commission terminal at Smith Cove, Seattle, and will convert it into one of the largest supply depots of its kind in the country. Properties taken over consist of the two huge wharves, Piers 40 and 41, and 12 acres of adjacent land, including two petroleum tank farms owned by Richfield and Texaco oil companies. The Navy will now be in position to furnish both vessels of the fleet and Alaskan air bases with a direct truck-rail-sea connection.

The 76-acre area, including the two half-mile long piers, is now designated as the 13th Naval District Operating Annex. Commander L. A. Odlin, officer in charge, said the depot, when completed, would be able to serve as many as 12 battleships at once.

Portland Plants Pool Interests

Thirteen metal working plants have combined in Portland under the name of **Oregon War Industries, Inc.** Head of the pool is E. C. Sammons, president of the Iron Fireman Manufacturing Co., and the executive vice president is J. L. Jennings, until recently vice president of the Willamette Iron & Steel Corp. It is understood that the organization has already obtained a $5,000,000 order for reciprocating steam engines for Liberty type ships. To provide headquarters, plant and office, the old Smith & Valley Iron Works has been taken over. Other plants engaged in the pool include: Service Brass & Bronze Co.; Ray F. Becker Co.; Iron Fireman Mfg. Co.; King Bros., Inc.; Steel Tank & Pipe Co.; Leupold Volpel Co.; Wentworth & Irwin; Schmitt Steel Co.; Griffiths Rubber Mills; Premier Gear & Machine Works; L. R. Teeple Co.; Vaughan Motor Co.; Lutz Marble Co.

Six Ships On One Way

According to officials, the order for the fourteen coastal mine sweepers just ordered from the Willamette Iron Works, will involve an expenditure of about $21,000,000. The craft will be built on a single way, erected on property adjacent to the yard. This one way will be large enough to accommodate six of the vessels at one time, and leave plant room to take care of the new order for 88 Liberty type engines.

Seattle Launches First Navy Vessel

The first vessel in Seattle built for America's two-ocean navy, and the first of her type launched in the country, was christened at the yards of the **Associated Shipbuilding Co.** on Harbor Island February 14. This was a 320-foot seaplane tender, which will join the fleet early in the summer as the U. S. S. Rockaway. Mrs. Zeno E. Briggs, wife of the senior captain in the Thirteenth Naval District, christened the ship at the outfitting dock. This vessel was built in a graving dock and had been floated the day before her christening. Another keel was being laid in the graving dock as the christening ceremony was held.

The builders have contracted to construct four of these vessels, using the docks where the huge concrete pontoons for the Lake Washington floating bridge were built. Raymond J. Huff, vice president of the Puget Sound Bridge & Dredging Co., one of the component concerns at Associated, was master of ceremonies, and the chief address was given by Governor Arthur B. Langlie of the State of Washington.

MRS. ZENO E. BRIGGS (sponsor) and her party on outfitting dock, Associated Shipyards, Seattle, after christening U. S. S. Rockaway

New Kaiser Shipyard At Vancouver

Over two thousand men are working at this date on the new shipyard which is being built at Vancouver, Washington, for Kaiser Co., Inc. So far, the work has consisted mainly of dredging, but construction work is under way and the operators expect to have the yard ready for operation in the spring. It will have eight "Liberty type" shipways, but it is believed that new improvements in design, etc., will make it turn out as many ships as the Oregon Shipbuilding Co., which has been named by the Maritime Commission as the most efficient, to date, in the country. Both yards will be more or less under the same management and affiliated ownership. The cost of the new yard will be around $12,000,000.

Tacoma Plant To Be Expanded

Disclosing an anticipated increase in an already large backlog of orders, Walter L. Green, vice president and general manager of the **Seattle-Tacoma Shipbuilding Co. No. 1,** reveals that test piling have been driven for the addition of three new outfitting ways. The berths will be on the Wapato side of the waterway on property now owned by the shipbuilders.

Plants Get "E" Pennants

Employees of the **Albina Engine & Machine Works, Inc.** of Portland, took a few minutes off February 12 to celebrate the award to their establishment of the first of the official Navy "E" pennants to be received by any Columbia River plant up to that time. It is one of three pennants awarded to Portland plants for winning top efficiency orders during the current year. Pennants were also due for presentation to the **Willamette Iron & Steel Works,** and the **Oregon Shipbuilding Co.**

Two More Shipyards Pool Resources

Two Seattle concerns, both located at Ballard—the Seattle Shipbuilding & Dry Dock Corporation and the Ballard Marine Railway Co., Inc.—each of which is building four 135-foot mine sweepers for the Navy, have pooled their resources to expedite deliveries.

All mold loft work is performed in one yard, eliminating duplication of cost and effort. The yards also trade materials and equipment back and forth whenever one of them is likely to be held up, replacing them when delayed shipments arrive. **R. B. Bivens** is general manager of the Seattle Shipbuilding & Drydock Co. and **William** and **Henry Fryberg** are heads of the Ballard Marine Railway. **W. C. Nickum & Sons** are technical advisors and purchasing agents for both plants.

Marine Shorts

Due to the fact that the ferries of the Black Ball Line travel in all parts of Puget Sound, and that some of them go through important defense areas, the company has circulated letters among travelers and employees in urging them not to reveal things they have observed through contact with Army and Navy activities. **Capt. Alex Peabody,** president, says that passengers frequently have opportunity to observe vessel movements in the vicinity of the Bremerton Navy Yard. Because of this, he asked both employees and travelers to "Serve with Silence."

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News has been received from Washington that Seattle has been designated as a primary port in Army transport. The immediate effect will make the Army Transport Service, operating from the Seattle port of embarkation, entirely independent from San Francisco headquarters, under which supervision it has operated since being established here.

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Perry D. (Dinty) Moore, president of the Tacoma Propeller Club, has issued a plea to Washington that Tacoma docks and harbor facilities be more widely used by the Government in the loading and unloading of ship cargoes incidental to troop and defense movements.

* * *

Plans for speeding increased ferry service to and from Harbor Island at Seattle for the benefit of the shipyard and other defense workers are being gradually worked out so as to save the congestion at the bottleneck at Spokane Avenue. Ferry service is now being provided for 1500 workers, which can be expanded to about 4500. This would be handled by the city. Private ferry companies have also made application; new buses are to be purchased; but the problem is still going to be a tough one to solve.

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Important additions are being considered to the Coast Guard patrol in the Portland district as a result of the rapid development of shipbuilding and other allied industries there. **Capt. W. H. Munter,** senior Coast Guard official for the Thirteenth District, has ordered that the Coast Guard patrol fleet in the Portland district be increased to six vessels, one or two for service in the Vancouver area, and the remainder at Portland, while a base will probably be established to augment the Astoria operations base.

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Portland's second sub-chaser was launched at the **Albina Engine & Machine Works** January 22. The 165-foot craft is one of nine to be built at the yard, and was christened by Miss Patricia Marie Pearson, niece of George Rodgers, president of the company.

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News FROM THE PACIFIC SOUTHWEST

by K. M. Walker

Martinolich Yard Changes Hands

The leasehold and plant of the Martinolich Shipbuilding Company, located at the foot of 28th Street, San Diego, has been acquired by the Lynch Shipbuilding Company, a wholly-owned subsidiary of the Benson Lumber Company, San Diego, with Frank C. Lynch as president. The yard will continue with the building and repair of fishing vessels of all sizes, and has the only marine railway in San Diego available to commercial vessels, capable of handling the largest of the tuna clippers. Naval contracts now in hand consist only of conversion work. There is no new construction on the 250-foot building ways, and one unfinished hull, the large tuna clipper Conte Grande, is at the outfitting dock, awaiting engines, which are delayed indefinitely due to war conditions.

Begun as the Warren Boat Yard, with an 800-ton marine railway, it did not survive the depression, and lay idle for several years, until September, 1940, when the three Martinolich boys and John J. Petrich obtained a ten-year lease on the five acres of property. The Martinolich Shipbuilding Company was formed and proceeded with rapid improvement, while building four tuna vessels, including the unfinished Conte Grande. They installed a 1500-ton marine railway so that the largest of the tuna clippers and the several Coronado ferryboats could now have local docking facilities. Two outfitting piers were also built, with machine, carpenter, electrical and boat shops and store rooms, and a small iron and brass foundry added.

In the fall of 1941, the yard passed into the hands of the San Diego Trust and Savings Bank, from whom it was acquired by the Benson Lumber Company.

War Changes Dredging Plans

The plans of the San Diego Harbor Department for improvement of the small boat harbor at the north end of the bay and west of the Marine Base, and for the creation of a mole adjacent to the San Diego Yacht Club, have been postponed until after the war. This action was taken after the Army District Engineer's office had been notified by Rear Admiral Ralston S. Holmes, 11th Naval District Commandant, that the proposed dredging and fill were not favored by the Navy.

Improvement of Mission Bay, under consideration for the past ten years, is now approaching an actuality with the call for bids by the State to cover dredging. This large shallow bay lying immediately north of San Diego, with a tide race entrance from the ocean at Mission Beach, has large possibilities as a fine harbor for small war, commercial and pleasure craft, and merits immediate development. Some years ago it was proposed that, as San Diego Bay has but one somewhat narrow entrance, a second entrance be opened to the sea through the Coronado Strand, and that a wide channel be dredged into Mission Bay through the neck of lowland between Point Loma and the mainland. With the Mission Bay tide race opened by dredging and the building of breakwaters, San Diego Bay would then have had three entrances instead of but one, which conceivably could be blocked by a daring enemy raid. Considering San Diego's importance as a Naval base, such additional entrances appear to be a vital necessity. However, the proposed Mission Bay appropriation is for a limited amount of dredging, intended primarily for erosion control, although State engineers plan the ultimate expenditure of about $1,500,000 for general harbor improvements.

Gambling Ship Sinks

After a colorful career the fishing barge Star of Scotland, not to be confused with the sailing ship of the same name and recently converted to a six-masted schooner, sank at her anchorage about a mile off the Santa Monica breakwater. She was built during the last war by the British as a Q-boat or submarine decoy vessel, was 285 feet in length and of about 3500 tons measurement. At the war's end she was converted to a passenger vessel, and was later sold to Mexican owners and renamed Chiapas. For several years she plied between California and Lower California ports in the service of the Mexican States Line. Her subsequent ownership is somewhat confused, but she bore the names La Playa, City of Panama, City of Hollywood, Texas and Star of Hollywood, before passing to the ownership of Harry Wilson of Long Beach and W. E. Monstead of Redondo Beach and becoming the fishing barge Star of Scotland.

Tuna Boats Resuming Operation

After two months of negotiation between the A. F. of L. Machinists Union, the A. F. of L. Hook, Line and Bait Fishermen's Union and the Tuna Boat Owners' associations an agreement covering rates of pay and working conditions was reached the latter part of January, and the labor situation, contributing partly to the long tie-up of this fleet, is now settled.

Another cause—war risk insurance—has now been temporarily settled by the February 13th announcement of the Maritime Commission that, in accordance with their program of stabilization of war risk rates, a schedule has been agreed upon with the American Marine Insurance Syndicate, effective until March 31, and which provides a rate of 1½ per cent of a vessel's valuation for a voyage not exceeding 45 days, and applicable to tuna vessels operating on the banks off the West Coast of Mexico and Central America.

The larger tuna boats, designed for operation among the Galapagos Islands, are still, at the moment of this writing, inactive, but there are hopes that the ban on operations in these islands may be lifted. Representative Ed. Izac is working with the Navy Department and the Bureau of Fisheries in Washington toward this end.

San Diego Boat Yards

The San Diego Marine Construction Company, in the month ending February 15, had three launchings. First was the 65-foot wooden passenger ferry Star for the Star & Crescent Boat Company. This little vessel has a beam of 18 feet, is of 25 tons displacement, is powered with a 100-hp Cummins diesel engine, and will carry 185 passengers on the North Island run. Her launching, late in January, consisted simply of picking her up with a derrick and placing her in the water. The second launching was that of the tug San Miguel, also for the Star & Crescent Boat Company, which will be used to tow the new 9000-barrel, steel tank barge of the Star & Crescent Company between San Diego and San Pedro. This towboat is to be powered with a 460-hp Washington diesel engine, and has unusually smart lines. Finally on February 13, in spite of its also being Friday, the Navy's new 136-foot mine sweeper YMS 113, which number apparently inspired the date of launching, was christened by little six-year-old Miss Sue Blakely, daughter of Mr. and Mrs. John Blakely, and granddaughter of Rear Admiral Charles A. Blakely. This is the first war vessel to be built in San Diego since the last war, and into her building went materials from China, Java, Malaya and the Philippines. Three sister vessels are on the stocks of the San Diego Marine and rapidly nearing the launching.

The fourth launching of the same period occurred at the plant of the **Campbell Machine Company,** San Diego, when the $225,000 tuna clipper Commodore slid down the ways, after christening by Miss Rose Vattuone, daughter of Giovanni Vattuone, one of the owners. This 250-ton vessel is 129 feet long, 28 feet in beam, and a 750-hp super-charged Union diesel engine will give her a top speed of 12 knots.

The Campbell Machine Company has started construction of a 75-foot fishing vessel for its own account, which will be powered with a 125-hp Union diesel engine.

The Harbor Boat Works and the **Robbins Marine Engine Works** are both in process of moving their plants to the new boat yard area near the foot of 28th Street, San Diego. Both plants have three ways, and are in position to work as a unit, with Peter Rask, of the Harbor Boat Works, handling the hull work, and Ira Robbins, of the Robbins Marine Engine Works, handling the machinery installations and repairs. All the equipment of the Harbor Boat Works has been moved to the new site, and most of that of the Robbins plant. These concerns, working in conjunction, are figuring on some naval contracts and are in a position to give the Navy Department some first-class service, both in quality of work and in speed of construction.

NEWS FROM PACIFIC NORTHWEST

(Continued from page 53)

The Everett-Pacific Co. has been awarded a contract for the construction of a $3,000,000 floating steel drydock for the Navy and has been granted an option on an Everett port property for the location. The 18,000-ton dock will take a year to build, with construction expected to begin within 30 to 60 days.

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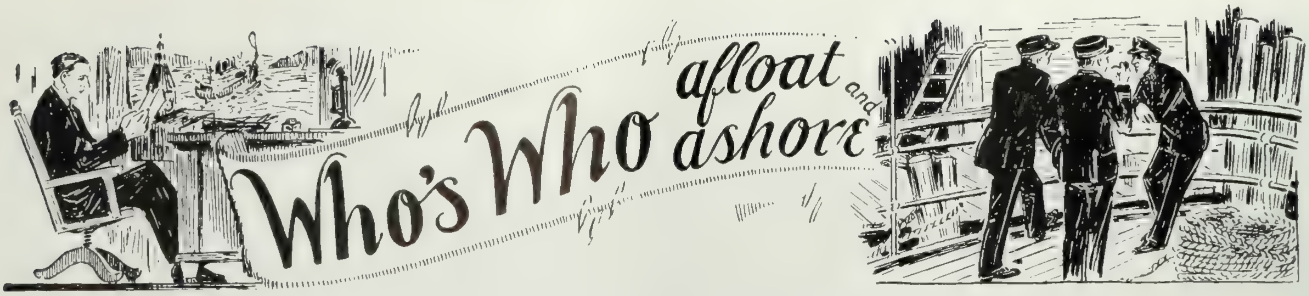
Marine Short-Shorts

Extension of a dock at the Lake Washington shipyard, Houghton, Washington, is sought, so that the ferry Lincoln may continue to haul workers direct to the yards from the Seattle side of the lake... **Oregon Shipbuilding Co.,** January 28, launched its twelfth Liberty ship at Portland, the Thomas McDonough. ... **Al Lewis,** Olympia contractor, claims an order from the Maritime Commission to build six 75-foot steel tugboats at a total cost of $750,000. . . . **Portland Chain Mfg. Co.** has closed a contract with the Maritime Commission to supply 50 anchor chains for cargo vessels to be built in Portland yards. . . . The U. S. Navy wants commercial fishermen to donate discarded fishnets and seines for use in camouflaging naval vessels. Empty gunny sacks are also gratefully received. . . . **Coast & Geodetic Survey** at Seattle have just issued a new chart, No. 8802, covering the areas from the Alaska Peninsula to the Aleutian Islands at Seguam Pass, including extensive amendments and additions through recent survey.

Personal Gleanings

A. R. Lintner, vice president and general manager of the American Mail Line of Seattle, has recently been appointed Pacific Northwest representative of the U. S. Maritime Commission's division of emergency shipping with headquarters at Seattle. His duties will be to coordinate all cargo movement to and from the Pacific Northwest. He will also retain general supervision of the American Mail Line. Lintner was district director of the U. S. Shipping Board, with headquarters in Seattle, during World War I, and has also had a long service with various shipping companies, including the States and Quaker lines. . . . **Lieut. Arthur S. Haines, Jr.,** Naval Reserve, who was assistant port captain of **Swayne & Hoyt** in 1939 and 1940, has been ordered to active service. Haines more recently held a post as third officer of the S. S. Delsud, of the Mississippi Shipping Co., and has a master's license. . . . **Col. Eley P. Denson** is commanding officer of the Seattle Port of Embarkation for the Army, and **Lt. Col. Thomas J. Ward** is superintendent of the Army Transport Service. . . . **Edgar F. Kaiser, Jr.,** manager of the Oregon Shipbuilding Co., Portland, says that 10,000 new homes will be needed right in the vicinity of St. Johns to house increased workers due to the recent and future expansion of the yard.



Who's Who afloat and ashore

Edited by Jerry E. Scanlon

Vickery Takes Oath of Office

Howard L. Vickery, vice chairman of the United States Maritime Commission, on February 12 took the oath of office as Rear Admiral, United States Navy. The oath was administered by Rear Admiral Emory S. Land, Administrator of the War Shipping Administration, and Chairman of the Maritime Commission, in a quiet ceremony in the latter's office in the Commerce Building at noon.

Vickery was elevated from the rank of Captain to Rear Admiral by Senate confirmation of President Roosevelt's nomination February 4, 1942. His promotion came in recognition of his outstanding work in handling the Maritime Commission's huge construction program. He will rank as a Rear Admiral from January 22, 1942.

Admiral Vickery first became a member of the Commission September 25, 1940, after having been appointed by the President through special Congressional legislation, necessary because of his status as a commissioned officer on the active list of the United States Navy.

He was first assigned to the Commission, however, May 24, 1937, to serve as assistant to Admiral Land who was then the Commissioner in charge of construction and technical activities.

As vice chairman of the Commission, he is continuing the duties of supervising the Maritime Commission's greatly expanded construction program, which calls for delivery into service of 18,000,000 deadweight tons of merchant shipping in 1942 and 1943.

Born at Bellevue, Ohio, April 20, 1892, he is one of the Navy's youngest Rear Admirals. He was educated in Cleveland, Ohio, and was graduated from the U. S. Naval Academy in 1915. He holds a master of science degree in naval architecture, and is a graduate of the Army Industrial College.

He served: in the cruiser and transport force during World War I; a tour of duty as inspector of submarine construction; three years as superintendent of new construction and outside superintendent of the Boston Navy Yard; as Technical Advisor on Shipping to the Governor General of the Philippines; as a Treaty Engineer with the Haitian Government; and as head of the War Plan Section of Design of the Bureau of Construction and Repair of the Navy.

He is a member: of the Society of Naval Architects and Marine Engineers; of the Council of the American Bureau of Shipping; of the Council of Society of Naval Architects and Marine Engineers; and is Chairman of the Board of Trustees of the Cleveland Law School, Cleveland, Ohio.

New Pacific Coast Director of W. S. A.

John E. Cushing, president of the American-Hawaiian Steamship Company, and one of the country's foremost maritime leaders, was selected by **Rear Admiral Emory S. Land** to be Pacific Coast Director of the new War Shipping Administration.

Long regarded as one of the nation's most capable shipping men, decision of Admiral Land to name Mr. Cushing was received with acclaim by West Coast operators.

In his new post, he will supervise the allocation of tonnage in all routes and generally direct the operations of shipping on the Pacific Coast. Named as assistants were **Ernest J. Bradley,** present coast head of the Division of Emergency Shipping, which has been absorbed into the new bureau; and **A. R. Lintner,** general manager of the American Mail Line in Seattle.

Close upon the appointment of Mr. Cushing, **William Radner,** secretary of the Matson Navigation Company, was selected to be general counsel in

JOHN ELDRIDGE CUSHING

Washington for the War Shipping Administration.

He brings to his new post the experience of a quarter of a century in marine business. During the last war he served with the Shipping Board.

San Francisco Bar Pilot Changes

Shortly after **Captain Mitchell Tyson** retired as a San Francisco Bar Pilot with more than 41 years' service, Governor Olson appointed the veteran a member of the California State Pilot Association. He succeeded **Captain N. J. Kane,** port captain of the American-Hawaiian Steamship Company.

The Governor's action in appointing Captain Tyson came as a complete surprise as the name of **Edward G. White,** prominent steamship executive, had come to the front as the most likely new member.

In the appointment, **F. R. Shoemaker,** named last year to the Pilot Commission, was unanimously elected to be president. He is associated with the insurance brokerage firm of French & St. Clair. Bradford Melvin, local attorney, is the third member.

OSCAR J. BEYFUS, well-known San Francisco stock broker, has closed his office to work in the Navy in a civilian capacity as administrative assistant to the commander, base force, subordinate command. His duties chiefly will be organization of tanker facilities

Captain Al Thompson has retired from the sea after more than forty years, of which 22 were spent as a San Francisco Bar Pilot.

Of all the nineteen members of this valiant body of mariners, Captain Thompson is the best known. The popular skipper, who was born in San Francisco on "tar flat," has had a varied and notable career. He is remembered as having skippered for ten years the yacht Venetia, owned by the late John D. Spreckels.

In 1920, Captain Thompson was appointed to the San Francisco Bar Pilots.

Captain Thompson, who resides in San Francisco with his family, said, "from now on until the end of the voyage" he is on vacation.

The new member of the San Francisco Bar Pilots is **Captain William F. Scorah.** He took the post vacated by Captain Al Thompson, resigned.

He was formerly skipper on American-Hawaiian vessels and came first to this port as master of one of the "Point" vessels for the firm of Swayne & Hoyt, and then shifted to A-H.

Captain Scorah has won for himself a host of friends, and his selection by Governor Olson, backed by the recommendation of marine leaders, was well received by master mariners.

CAPTAIN WM. F. SCORAH
New S. F. Bar Pilot

Shipping Men To The Service

Edward "Ed" Dougery, for several years marine editor of the San Francisco *Chronicle,* has entered the Navy with the rank of ensign. Dougery, before entering the marine newspaper field, was one of the University of California's all-time star center basketball players.

Frank W. Smith, marine editor of the San Francisco *Examiner,* has resigned. He is now on vacation and it is reported that he will rejoin the Army upon his return to San Francisco. In World War I Mr. Smith was a sergeant major in France for two years, and was decorated by three governments for heroic action as a heavy artilleryman. He later served with Colonel Tobin after the Armistice in Coblentz, Germany.

The Government called into service March 1, **Captain J. A. Hazelwood,** superintendent of the American-Hawaiian Steamship Company's stevedoring operations in Portland. He was given the rank of Lieutenant Colonel, assigned to the Army Transport Service, in charge of military discharge at an undisclosed overseas port.

Captain Hazelwood has been a leader in Oregon's maritime commerce and, when he left his civilian duties, was president of the Portland Merchants Exchange.

Orders were received late February by officers of the executive staff of the cadet training section of the Maritime Commission, certifying them to active duty, effective immediately. Most of them held rank in the USNR. The order does not change their duties as they were assigned the same job.

Affected by the order in the San Francisco personnel were **Lieutenant Commander M. E. Crossman,** in

LIEUT. FRED W. WAYNE
Caterpillar

charge of the Pacific Coast district; **Charles Sauerbier; Lieutenant Commander R. M. Sheaf,** in charge of the cadet school on Treasure Island; **Lieutenant Robert Eisenberg; Ensign Edward Hochuli; Lieutenant Arthur Powell;** and **Lieutenant Frank Flanner,** all of the Treasure Island post.

Henry H. Howard, manager of the Engine Sales Division of Caterpillar Tractor Co., has been lent to the Ordnance Department, at their request, to serve as consultant to Colonel J. K. Christmas of the Tank and Combat Vehicle Division.

Mr. Howard's position at "Caterpillar" will not be considered vacated, but his duties and responsibilities will be assigned for the period of his absence to Horace W. Smith, assistant manager of the Division.

It's **Lieutenant Fred W. Wayne** now, for the popular "Caterpillar" Engine sales representative has been called to active duty as a lieutenant with the Ordnance Corps. He has been ordered to report for duty on the Atlantic seaboard.

Fred Wayne's work with Caterpillar Tractor Co. during the last 21 years has made him a familiar figure in all of the western states. His travels have made him many friends in logging camps and mines, as well as among contractors, farmers and boat owners.

W. S. A. Appointments

Admiral Emory S. Land, Administrator, War Shipping Administration, announced February 17 the appointment of the following officials: **H. Harris Robson,** who will serve as Director General of Shipping; **D. F. Houlihan,** who will serve as Director of Fiscal Affairs; and **William Radner,** who will serve as General Counsel. In addition to their specific duties, these three individuals will constitute a committee to advise and consult with the Administrator on problems of general policy.

HENRY H. HOWARD
Engine Sales Manager, Caterpillar

Mr. Robson has been serving as General Director of Shipping with the United States Maritime Commission and was previously manager of operations for the United Fruit Company.

Mr. Houlihan is a member of the public accounting firm of Price Waterhouse & Co., and previously served as Director of Finance with the United States Maritime Commission, and as consultant on shipping with the Office of Production Management.

Mr. Radner is secretary of the Matson Navigation Company, and was formerly counsel for the Reconstruction Finance Corporation, and later counsel for the United States Maritime Commission.

Washington W. F. Employers Elect

The **Waterfront Employers Association** of Washington elected **Keith C. Middleton,** president the first of February. He is the father of **Howard Middleton,** secretary in San Francisco for the Pacific Westbound Conference, and at present aiding the Maritime Commission's Division of Emergency Shipping under **E. J. Bradley.**

Mr. Middleton's election was the second honor bestowed. He was recently elected vice president of the Waterfront Employers Association of the Pacific Coast.

M. G. Ringenberg was renamed vice president and general manager.

Mr. Middleton is a veteran in the service of Dodwell & Co. He replaced **W. C. Dawson,** who headed the employers group for four years and has served as treasurer since it was founded 34 years ago.

Twelve trustees were chosen as follows: **George W. Albin,** Ames Terminals; **E. C. Bentzen,** president of the Olympic Steamship Co.; **Harold Burchard,** of Burchard & Fiskin; **R. C. Clapp,** Rothchilds Stevedoring Company; **A. R. Lintner,** vice president and general manager, American Mail Line; **M. McKinstry,** Alaska Steamship Company; **H. E. Rhoda,** Luckenbach Steamship Company; **William Semar,** manager Northland Transportation Company; **F. E. Settersen,** Griffiths and Sprague; **Samuel B. Stocking,** Shaffer Terminals, Tacoma; **W. D. Vanderbilt,** northwest manager for W. R. Grace & Co.; and **C. B. Warren,** of Alexander & Baldwin.

New U. S. M. C. Engineer at Portland

S. M. Buffett of Los Angeles has taken up his new duties as Maritime Commission assistant plant engineer at the Oregon Shipbuilding Corporation at Portland. He will assist O. A. Mechlin, resident plant engineer.

He succeeds Charles Bateman, who was shifted to a similar position at Richmond. Mr. Buffett has been a structural engineer in Los Angeles for 26 years. He joined the commission staff in December.

Promotion and Shifts in Steamship Offices

Appreciation of the yeoman service rendered during his year's duties with the American President Lines has been rewarded with the promotion of **E. Russell Lutz** to be executive assistant to **Henry F. Grady,** president.

Mr. Lutz's elevation from his former post now places him in the position of administration of the company's executive department under President Grady's supervision.

Twelve months ago, Mr. Lutz arrived in San Francisco from Washington, where he had served as a member of the Legal Department of the Maritime Commission for four years, the last two as Assistant General Counsel. Prior to that time he had been eleven years in the State Department, first as Assistant Solicitor, and later as Assistant Legal Adviser.

Another official of the McCormick interests to change jobs is **Gordon Rowley,** former district freight agent. He has joined the Anchor Line's freight department.

New duties were placed under **Eugene "Gene" Hoffman's** direction by **Henry F. Grady,** head of the American President Line, with the former's assignment as acting general office manager in addition to his publicity and advertising work.

Mr. Hoffman takes the place of E. E. Flaherty, who has joined the Navy as Lieutenant Commander. In the shifting of officials, **E. C. Kester,** veteran of the Dollar and APL force, was named manager of the Insurance Department.

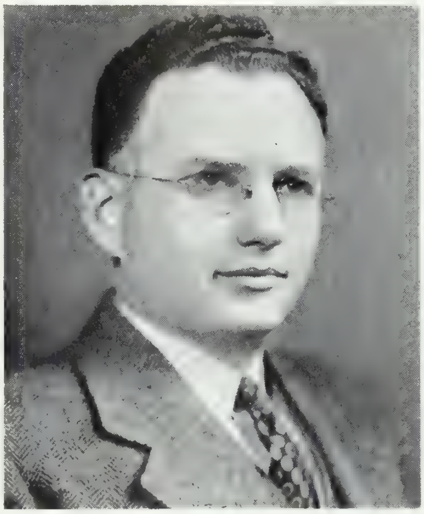
Colonel B. C. Allin, formerly director of the Port of Stockton, is now an official of the Parr-Richmond Terminal. Under Colonel Allin's forceful administration, the Port of Stockton assumed a leading position among the inland waterway terminals of the nation with some of the largest intercoastal cargo carriers calling direct.

Resumption of service from the west coast of Central America and Mexico to Los Angeles has been ordered by United Fruit Company. Three "reefer" vessels will return to the service, which will not include San Francisco for the present.

General Pacific Coast commodities will be taken south, and the banana trade handled north. **Frank Cook,** freight agent for the line, announced.

Yacht owners in Puget Sound waters have contributed twenty-three vessels to the United States Coast Guard, Lieutenant Commander N. S. Haugeu announced.

In many instances owners volunteered their services and enrolled in the Coast Guard Reserve.



E. RUSSEL LUTZ

Executive assistant to president, American President Lines

The new offices of the **States Steamship Company** and its subsidiaries, the **Pacific-Atlantic Steamship Company** and **California-Eastern Line,** are now located in the Marine Building, Vancouver, Wash. They were formerly in Portland.

Joseph Friedlander, manager of the Steamship Department of the American Trading Company, has taken leave and is now a member of the Transportation Division of the Fourth Air Service Area in San Francisco.

S. M. Buffett of Los Angeles succeeded **Charles Bateman** as assistant plant manager under the Maritime Commission's jurisdiction in the Oregon Shipbuilding Corporation at Portland. He is assistant to **O. A. Mechlin,** resident plant manager.

W. J. GLEASON

From S. S. freight agent to shipyard traffic

Mr. Bateman was shifted to a similar post at Richmond. Mr. Buffett has been with the Commission since last December. Prior to that time he was engaged for twenty-six years as a structural engineer.

Following the action of other steamship executives who, forced by the war and restrictions of operations, have sought other lines of endeavor, **William J. Gleason,** freight agent for the McCormick Steamship Company, has become associated with the Traffic Department of the Kaiser Company, Inc., at Richmond, California.

R. W. "Bob" Gerhart, former contracting manager for the shipbuilding division of the **Consolidated Steel Corporation,** Los Angeles, is now associated with the **California Shipbuilding Corporation,** Los Angeles.

Isthmian Steamship Company has moved its offices from 25 Broadway to 71 Broadway, New York City.

The Army Transport Service has commandeered the passenger offices and facilities of **Castle & Cooke, Ltd.,** in Hawaii.

The post of manager of the **Commercial-Union Group** in San Francisco, vacated by the passing of **George R. Hansen,** has been filled with the appointment of **T. William Harwood,** formerly located in Portland with the **Charles W. Sexton Company.**

ABOVE: Port Captain L. H. Westdahl of American President Lines congratulates U. S. M. C. Engineer Cadet Mark E. Campbell on his winning the coveted outstanding Award Pin. Cadet Training Instructor Lieut. Comdr. Malcolm E. Crossman looks on approvingly

U. S. M. C. Cadet Corps Honors

Engineer Cadet **Mark E. Campbell,** USNR, of the U. S. Maritime Commission Cadet Corps, has hit another mark in his commendable career while undergoing training to become an engineering officer in the U. S. Merchant Marine.

Less than a year ago, Cadet Campbell was presented with the Award Pin for high scholastic achievement by **E. C. Mausshardt,** District Manager of the U. S. Maritime Commission, San Francisco, for having attained a grade of 96.01 per cent in his annual examination.

Two weeks ago, Cadet Campbell received another honor when presented with the Outstanding Award Pin. The decoration was bestowed by **Captain L. H. Westdahl,** Port Captain of the American President Lines, Ltd., who displays a keen interest in cadet training. Attending the presentation was **Lieut. Comdr. Malcolm E. Crossman, USNR,** District Cadet Training Instructor of the Maritime Commission.

Cadet Campbell was born in Seattle and is 22 years of age. He is at present serving on the M.V. Crown City, but he previously had sea experience on the President Pierce and President Madison. The award followed after officials of the company had reviewed the records of all cadets serving on vessels of the American President Lines.

Another Cadet of the Maritime Commission won signal recognition with the selection of Deck Cadet **Elmer S. Thompson,** 3rd Class, of the Maritime Cadet Corps, being presented with the award pin for his record on board the Mormacsea. Cadet Thompson was the first member of the Moore-McCormack Line on the Pacific Coast to be so honored.

Present at the ceremonies held in San Francisco were **Port Captain W. T. Lion; Lieut. Comdr. Malcolm E. Crossman, USNR,** District Instructor for the Maritime Commission; and the Moore - McCormack representatives, **K. C. Tripp** (general freight agent) and **Kirkwood H. Donavin** (Pacific Coast manager).

BELOW: Deck Cadet Elmer S. Thompson is congratulated by Port Captain W. T. Lion of the Moore-McCormack Line on his winning the Award Pin for his fine record on S. S. Mormacsea. K. C. Tripp, K. H. Donavin and Comdr. M. E. Crossman support the award

New Mackay Service

N. O. Gunderson, commercial supervisor for Mackay Radio and Telegraph Company, San Francisco, tells us of this announcement made by **H. L. Rodman,** Mackay's general manager, on February 16:

"A direct radiotelegraph service between San Francisco and Khabarovsk, U. S. S. R., was formally opened by Mackay Radio today (Feb. 16, 1942) for the handling of messages between the United States and the U. S. S. R. This new circuit is in addition to the direct radiotelegraph circuit opened by Mackay Radio between New York and Moscow December 14, 1941.

"Message rates over the new circuit are the same as the standard rates via the New York-Moscow route. Hours of operation of the San Francisco-Khabarovsk circuit at present are from 10 a.m. to 7 p.m. Pacific War Time."

Obituary

Mr. Donald G. Sherwin, vice president and director of Caterpillar Tractor Co., died at 10 p.m. February 11, at his home in San Leandro, California. Although his death was sudden, he had been suffering for several years from ill health that necessitated his return to California in 1940.

For six years prior to that time, he had been a resident of Peoria, Illinois. Mr. Sherwin was a native of New England and was born in Suffield, Connecticut, in 1894. Graduated from St. Lawrence University and Brooklyn Law School, he was admitted to the bar in New York State. He served as a lieutenant in the U. S. Navy in World War I.

Another well-known figure of Pacific Coast marine affairs passed away suddenly with the death of **Bernard "Barney" O'Donnell** early last month.

Mr. O'Donnell was general superintendent of the United Engineering Company. He was stricken suddenly and death came after being rushed to a hospital.

American Bureau Elects

The 80th annual meetings of the Board of Managers and Members of the American Bureau of Shipping were held January 27 in the Bureau's board room, 47 Beaver Street, New York City. This is the first annual meeting to be held in the new building.

President J. Lewis Luckenbach presided and expressed his gratitude to more than 60 managers and members for their attendance.

Mr. Luckenbach was reelected president for the tenth time, and the following were reelected: **David Arnott,** vice president-chief surveyor; **Joseph W. Powell,** honorary vice president; **Jerome B. Crowley,** treasurer; and **John W. Cantillion,** secretary and assistant treasurer. **S. D. McComb** was elected honorary vice president.

The following were elected to the Board of Managers:

For the one-year term expiring January, 1943: **Joseph T. Lykes.**

DONALD G. SHERWIN
Vice president and director, Caterpillar Co.

For the two-year term expiring January, 1944: **Willard F. Jones, William R. Hedge, Charles Kurz.**

For the three-year term expiring January, 1945: **Fraser A. Bailey, Thomas E. Buchanan, Robert Haig, Lynn H. Korndorff, John McAuliffe, John F. Purcell, H. W. Warley, William D. Winter.**

The following were elected Members of the Bureau: **Bernard A. Moran,** president, Atlantic Basin Iron Works; **Emmet J. McCormack,** vice president, Moore-McCormack Lines, Inc.; **Harold Jackson,** president, William H. McGee & Co., Inc.; **A. L. Quackenboss,** supervisor marine operations, Union Oil Co., Los Angeles, California.

Award of the following prizes and scholarships for the year 1941 were announced by Mr. Luckenbach:

The Captain Charles A. McAllister Prize for Proficiency in Engineering at the United States Coast Guard Academy was awarded to **Cadet Joe Louis Horne.**

The American Bureau of Shipping Prize for excellence in studies in Naval Architecture and Marine Engineering was awarded to the following: **Samuel Reice Heller, Jr.,** University of Michigan; **Alexander William Welch,** Massachusetts Institute of Technology; **John P. Cassilly,** Yale University School of Engineering; **Jens Tonnes Holm,** Webb Institute of Naval Architecture.

The Stevenson Taylor Memorial Prize (Engineering Thesis) was awarded to **Jens Tonnes Holm** and **Jack Frederic Dallinger** of Webb Institute of Naval Architecture.

The Stevenson Taylor Memorial Scholarship was awarded to **Richard C. Owen** of Massachusetts Institute of Technology.

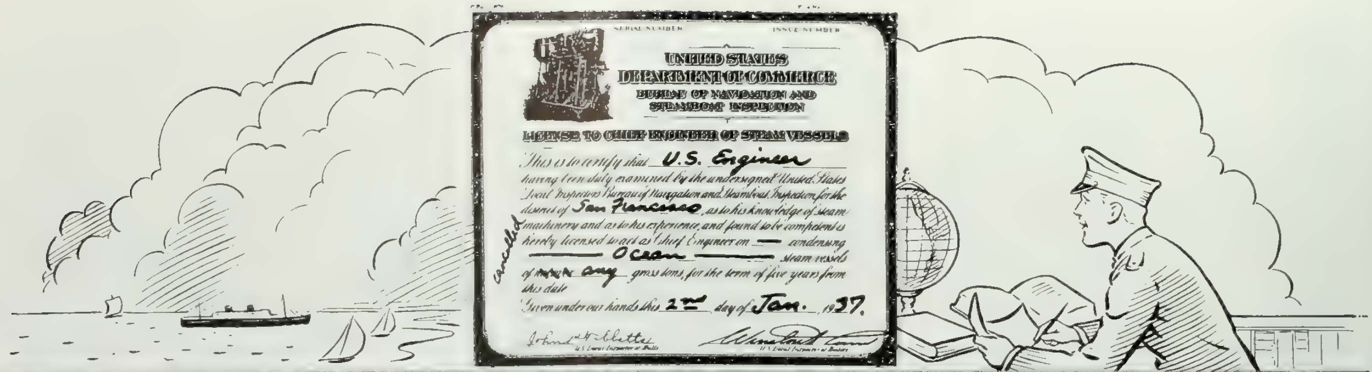
S. F. Quartermaster Section Moves to Oakland

The Quartermaster Section of the San Francisco General Depot, which has been located for a number of years at Fort Mason in San Francisco, Calif., has recently moved its offices to the new Administration Building at the outer harbor in Oakland, Calif. **Colonel F. J. Riley,** Quartermaster Supply Officer, announces that hereafter all business will be transacted at the new location and mail should be addressed to the Quartermaster Supply Officer, San Francisco General Depot, Oakland, Calif.

The Quartermaster Supply Office in its new location at the Oakland outer harbor is operating all activities in the various offices, as well as in all warehouses, on a 24-hour per day basis of three 8-hour shifts including Sundays and holidays. This is in order that there may be no interruption in the procurement, storage and issue of supplies to troops.

New S. S. Man

A son was born to Mr. and Mrs. **Ronald De Long** in a Los Angeles hospital on February 12. The father is the well-known member of the American President Lines' passenger offices. Ronald William was the name bestowed on the heir apparent.



SERIAL NUMBER

ISSUE NUMBER

UNITED STATES
DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION AND
STEAMBOAT INSPECTION

LICENSE TO CHIEF ENGINEER OF STEAM VESSELS

This is to certify that U.S. Engineer having been duly examined by the undersigned United States Local Inspectors Bureau of Navigation and Steamboat Inspection for the district of San Francisco, as to his knowledge of steam machinery and as to his experience, and found to be competent is hereby licensed to act as Chief Engineer on — condensing — Ocean — steam vessels of any gross tons, for the term of five years from this date

Given under our hands this 2nd day of Jan. 1937.

Cancelled

U.S. Local Inspector of Hulls

U.S. Local Inspector of Boilers

Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

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ELECTRIC PROPULSION OF SHIPS

Foreword

The feature of electric drive in itself is not new. What makes it new to most marine engineers is the use of alternating current electricity. Direct current electricity is more or less familiar to most of us. Its use as auxiliary power and light makes it a matter of common knowledge aboard ship.

Therefore, in this series, "The Chief" will assume that the reader is well-versed in the characteristics of dc electric power, the devices, controls, power units, meters and nomenclature of direct-current machines. The principal differences and similarities between it and alternating currents will be discussed.

Furthermore, the plane or level of the discussion will be adjusted for the assistant engineers and juniors in the hope that the non-licensed personnel will make an extra effort by reading books and writing in to "The Chief," and that the chiefs will make allowance for the simplicity and elementary character of the discussion.

Our next article will continue with this comparison of dc vs. ac machines. We will discuss parallel operation, several kind of motors and polyphase, three- and four-wire systems, meters and instruments. Later will come application of ac to propulsion.

Alternating current electricity is in general use in naval ships now. It has many advantages and some disadvantages. The most modern naval ships have both alternating and direct current, each applied in its most effective field of use. Like the horse and the automobile, both are needed by mankind. A brief comparison of the two systems, therefore, seems in order.

DIRECT CURRENT	ALTERNATING CURRENT
VOLTAGE: Difference in electrical pressure. A condition or stress like temperature or elevation. Unit, the volt. Steady or relatively so. No rapid change in value between the positive and negative terminals of a circuit.	**VOLTAGE:** Same meaning and unit. Ac generators produce electric voltage with continuous uniform harmonic changing values, zero to maximum positive, to zero, to maximum negative, to zero again. The time interval between two successive positive maximum values is the period, or one cycle.
CURRENT: Unit, the ampere. The rate of flow of electricity. The quantity per second passing any given point changes up or down with the hp or load, but usually remains flowing in one direction.	**CURRENT:** Same unit; same meaning. Changes uniformly like voltage reversing direction of flow twice each period or cycle, reaching a positive maximum once each cycle. The magnitude of the current maximum will vary from zero to any value with change in the hp or load.
POWER ENERGY: The rate of delivery of energy is power. Units of power are watt, kilowatt or 1000 watts, horsepower or 746 watts. By definition, the power in watt equals volts times amperes.	**POWER ENERGY:** Same meaning and units. The value of the ac volt and ampere have been standardized, so that although they run through these harmonic changes from zero to maximum, nevertheless volts times

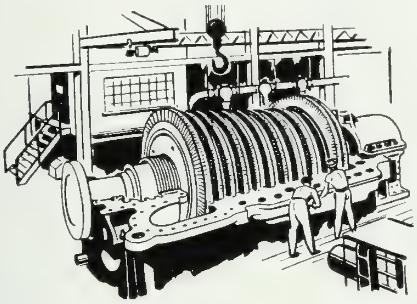
The power flows from the generator when current flows in direction of and under influence of the voltage. If current flows in a machine against its own voltage, and in spite of its own voltage, it receives energy and is a motor, a lamp or a heater. (Counter E.M.F. of motor and resistance voltage drop in lamp or heater.)

Power flow is steady, varying only as the load demands.

746 watts of electrical power is equivalent to one horsepower. Motors are rated in hp output at the shaft. If they were 100 per cent efficient, the electrical input at the terminals would be 746 watts for each hp output. If they are 80 per cent efficient, the input is 746 times the hp output divided by .80. The 20 per cent difference in loss in the motor which appears as heat must be carried away in the air ventilation.

Similarly, the generator must have more input than output, and hp input to shaft must be the watts output divided by 746, and again divided by the efficiency ratio.

The kilowatt is most frequently used with the relations; one kilowatt equals hp times .746, and hp equals kw divided by .746.



FREQUENCY: No dc meaning. Sometimes dc is referred to as electricity at zero frequency.

All dc machines, motors or generators are fundamentally ac machines with the added costly and bothersome commutator, whose sole purpose is to rectify the ac in the armature to dc at the machine terminals.

All armatures have ac in them. The frequency of which is equal to the rpm times number of poles divided by two times 60.

There are exceptions to this, too infrequent to mention.

On three-wire generators, the ac in the armature is tapped by collector rings, taken out to a reactor, the midpoint of which becomes the neutral of the three-wire dc system.

ARMATURE: Always the rotating member of generator or motor, because commutator must rotate, and armature has all coils connected to commutator.

Thus, main load current must pass through sliding contact of brushes. Current limit, 1200 to 1500 amperes, except in special machines. Voltage limits, 250 or 600, except in small and special machines. Power limits, 600 to 1000 kilowatt, except in special machines.

Thus, a multiplicity of machines is needed for large loads. Two armatures are sometimes mounted on one shaft to double capacity.

Commutators are a maintenance problem. They also limit speed of unit to 1200 rpm in large sizes and 1800 to 2000 in smaller sizes. Same special exceptions.

amperes equals true watts. Thus, 115 volts on a heater or lamp passing six amperes gives 690 watts and the heater gets just as hot and the lamp just as bright as though on direct current with same volts and amperes. The 115 volts and the six amperes are therefore only effective values, the peaks or maximums occurring once positive, once negative, in each cycle are higher than this effective value. The ratio is 1.41: The peaks are 41 per cent higher in value than the meter readings of effective value.

The power passes away from a generator when the current flows under influence of the machine voltage, although both are alternating in directions. Pulsations of power are therefore varying from zero to maximum to zero twice each cycle, but pass always in one direction from generator to receiver. The use of three-phase, with the timing of power pulses spaced one-third cycle from each other, and varying so that the total of the three is a constant value. Eliminates power pulsation. Single-phase motors hum and vibrate under this pulsating power.

If current flows against the machine voltage, it is a motor, lamp or heater.

The input, output, hp and watts relations are the same as dc.

Power is watts equals volts times amperes when single-phase, two-wire resistance loads are used, like heaters, lamps, etc. *For motors and transformers and three-phase, two other multipliers are used. More later on this point.*

FREQUENCY: The number of complete cycles per second of time. Shore standards are 60 cycles per second, expressed simply as "sixty cycle." Marine standards are generally 60 cycle.

Related to the number of poles and speed.

In any coil or set of coils in a generator, a wave of positive voltage is induced in one side of coils under poles of one polarity, and negative voltage in other side of coils under poles of other magnetic polarity. When they move on pole pitch, the voltage is reversed throughout. Thus, as a coil passes one pair or two poles, we have a complete cycle, or 120 poles are passed per second in a 60 cycle unit. Thus, frequency is pairs of poles per second; also revolutions per second times pairs of poles in the machine; and also revolutions per minute times number of poles divided by 60 times two, or 120.

For a motor, the speed in rpm equals frequency times 60 times two divided by numbers of poles.

ARMATURE: Not having to rectify voltage to dc, no commutator is needed; hence no need to rotate armature. Thus, all ac machines have stationary armatures. Main load current is collected by a solid connection leading to terminals. Can be well insulated. Practical limit in current may be as high as 5000 amperes. Practical voltage limit 13,000 volts. Practical limit in kilowatt is 60,000 kw, but many machines larger. 100,000 kw single-unit machines exist.

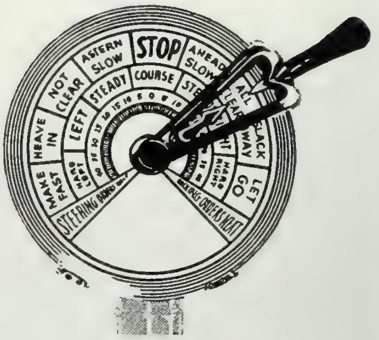
Small machines, unusual, 25 kw and less may have revolving armature because of mechanical and cost reasons. These deliver their load current through slip rings.

Speed of unit not limited by commutator. Thus, 3600 rpm, 60 cycle machines are standard up to 25,000 kw.

(Page 71, please)

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

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LETTERS FROM OUR READERS

The Skipper:

We are very much interested in your Tables B and C in the January, 1942, issue of Pacific Marine Review. We suggest that you add the information concerning the most important rule of all (Article 29 of the International, Inland and Pilot Rules) that it is legal negligence not to sound the danger signal even in the fog when the situation is not understood.

Very truly yours,
W. F.

ANSWER

It is very interesting to note the comments of our readers regarding the use of the **danger signal,** not less than four short blasts.

"The Skipper" calls attention to "Steady as You Go," page 140 of the October, 1941, issue of PACIFIC MARINE REVIEW; in that article we discussed how the courts have now extended the use of the danger signal to situations in fog where the vessels are not in sight of each other. In fact, as the law now stands, the danger signal must be used by vessels in the inland waters of the United States, whenever there is doubt as to the course or intention of the other vessel. This is the law as construed by our courts, and it applies in both fog and clear weather, whether or not the other vessel is in sight. A further illustration of this point is to be found in the case of the Celtic Monarch (1910) 175 F. 1006.

The tug **Sea Lion** was towing the steamer **Celtic Monarch** on the waters of Puget Sound. These waters are governed by the Inland Rules and the Pilot Rules. The Sea Lion collided with the vessel **Mainlander** while off West Point. The Mainlander was sunk almost at once. At the time of the collision, the weather was thick and a dense fog prevailed. The fog signals of the two vessels were heard by both. These fog signals indicated that the two vessels were approaching each other, but neither could ascertain with any degree of certainty the course of the other vessel. Both vessels, the Sea Lion and the Mainlander, were making excessive speed, also both vessels were aware of the fact that they were approaching each other and that danger of collision existed. In addition to both vessels being held at fault for excessive speed in fog, they were also held at fault for failure to sound the danger signal when it was apparent that they could not determine the course or intention of the other. In both this case and in many later cases, the courts have pointed out the necessity of using the danger signal whenever its use is required to advise the other vessel that her course or intention is not clearly understood. The average mariner regards the danger signal as a clear-weather signal only. This is not surprising; the text of the rules is very vague in the matter, and few sailors are versed with the law. However, let me once again emphasize that in order to have a clear understanding of the application of the Rules of the Road as they are construed in the United States, a knowledge of the judicial interpretation of all the rules is a vital necessity to all mariners. As I have said before, all too many sailors never find out their mistakes until they arrive before the Bar of Justice—too late then; the damage is done, and no amount of pleading will excuse the negligent party. They should have known the meaning of the rules, and by such knowledge, the collision might have been averted. This series of clarifications of the Rules of the Road started in the October issue of PACIFIC MARINE REVIEW and will continue for a few more months. It is hoped by the Skipper that all seafarers will read and study these articles. It is now our duty to keep the ships moving and avoid damage by practicing good seamanship. We shall lose enough valuable ships by enemy action without negligence on the part of our seamen. Let all seafarers resolve to study the Rules of the Road so that we know how to apply them to any conceivable situation, even on the darkest night.

It must also be noted by all that the *danger signal*, not less than four shorts blasts, is authorized *only* in the Inland and the Pilot Rules. It is *not authorized* in the International Rules. Owing to the fact that the use of the *danger signal* in waters where the International Rules govern has never been sanctioned by the courts, I believe there is some danger in its use. In case of a collision after sounding the danger signal in waters governed by International Rules, there is always the possibility that the other vessel may plead (in order to have the divided damage rule apply) that the danger signal was thought to be a backing signal, three short blasts; and that when the vessel that sounded the signal did not reverse, he was misled by her apparent failure to act upon her own signal. However remote this risk may be, we must always remember that the use of the danger signal outside of United States waters is entirely at our own risk and without legal sanction whatever.

Use of the Danger Signal For Vessels When Passing a Dredge

Rule 8, Pilot Rules.

Vessels intending to pass dredges or other types of floating plant working in navigable channels, when within a reasonable distance therefrom and not in any case over a mile, shall indicate such intention by blowing the passing signal prescribed in the local Pilot Rules for vessels under way (one blast for a port-to-port passing, and two blasts for a starboard-to-starboard passing), which shall be answered in the usual manner from said plant if the channel is clear and the approaching vessel may pass on the side indicated; otherwise the floating plant shall sound the *alarm or danger signal* (more than four short blasts) and the approaching vessel shall slow down or stop and await further signal from the plant.

When the pipe line from the dredge crosses the channel in such a way that the approaching vessel, owing to excessive draft, or for other reasons, cannot pass around the pipe line or dredge, a signal shall be given from the vessel by sounding *four blasts of the whistle*, which shall be answered by a like signal from the dredge. The pipe line shall them be opened for the passage of the vessel as soon as practicable. When the line is open for passage, the dredge shall so indicate by sounding the usual passing signal (one blast for a port-to-port passing, and two blasts for a starboard-to-starboard passing), and the approaching vessel shall promptly pass the dredge.

Speed of Vessels Passing Floating Plant Working in Channels

Rule 9, Pilot Rules.

Steamers, with or without tows, passing floating plants working in channels, shall reduce their speed sufficiently to insure the safety of both the said plant and themselves, and when passing within 200 feet of the said plant, their speed shall *not exceed five miles per hour*. While passing over lines of the said plant, *propelling machinery shall be stopped.*

Article 27. The General Prudential Rule.

"In obeying and construing these rules, due regard shall be had to all dangers of navigation and collision, and to any special circumstances which may render a departure from the above rules necessary in order to avoid immediate danger."

This Article is obviously a rule for exceptional situations—an emergency rule. Although the other rules are so complete as to provide for most situations, they cannot in the nature of things contemplate every possible emergency. Outside perils or the improper navigation of other vessels may present exceptional conditions, under which strict adherence to the definite rules would plainly bring about collision or other disaster, which skill and good seamanship, though involving a departure from the rules, might avert. In such circumstances, Article 27 permits and even requires maneuvers to avoid pressing danger that would otherwise be a breach of the rules.

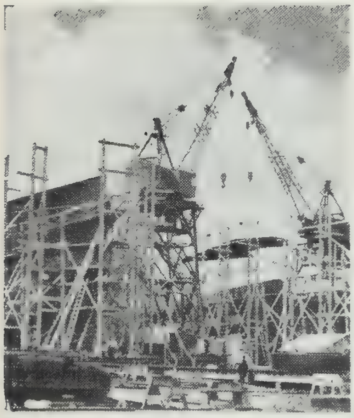
Article 29. The Rule of Precaution.

"Nothing in these rules shall exonerate any vessel, or the owner or master or crew thereof, from the consequences of any neglect to keep a proper lookout, or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case."

Articles 27 and 29 are frequently referred to as the Rules of Good Seamanship.

There seems to be a popular belief among many seamen that whenever risk of collision exists, then all rules except articles 27 and 29 are temporarily suspended. This is a fallacy, and a little reflection should convince anyone that it would be the utmost folly to have a set of rules which would not work in even a reasonable close situation. The decisions of the courts are that there can be no diversion from the rules except to avoid *immediate danger*. Generally speaking, Article 27, the rule of special circumstances and good seamanship, may be taken advantage of in the following situations:

1. Where the rules of navigation must be modified on account of the presence of a third vessel.
2. Where the situation is not specifically covered by the rules.
3. Where one of two vessels proposes a departure from the rules and the other assents.
4. Where the situation is *in extremis*.
5. Where apparent physical conditions make obedience to the rules impracticable.



On the Ways—
SHIPS IN THE MAKING

A Month's Launchings

The ship-a-day schedule of the United States Maritime Commission saw 26 ships, totaling more than 275,000 deadweight tons, slide down the ways of United States shipyards between January 15 and February 15. These ships are part of the 8,000,000 deadweight tons production in 1942 asked of the Maritime Commission and the nation's shipbuilders by the President for the Victory fleet.

Indications are that schedules will be stepped up to two ships a day within the next 60 days; that, before the end of the year, three ships a day will be launched on all coasts of the United States. New engineering developments, standardized plans and streamlined production methods, formulated by the Maritime Commission, have made such speed possible.

Sixteen of the 26 ships launched were of the Liberty cargo type. Four of the ships were tankers; two were cargo vessels built for the British government; and the rest are C-2 and C-3 cargo ships of Maritime Commission standard designs.

The Gettysburg was the first of 146 emergency, all-welded tankers now under contract in the shipbuilding program. It is a vessel of 16,500 deadweight tons, powered by a 6000-horsepower turbo-electric unit.

January 24 was the biggest launching day, when two Liberty ships and one tanker took the water. Two ships were launched on each of the following dates: January 17 and 28, February 4, 8, 14 and 15.

The launchings took place from

Ships Launched, Type and Shipbuilders—Jan. 15-Feb. 15

BOGUE, C-3 cargo ship, Seattle-Tacoma Shipbuilding Corp., Tacoma, Wash.
KALKAY, tanker, Sun Shipbuilding and Dry Dock Co., Chester, Pa.
NATHANAEL GREENE, Liberty ship, North Carolina Shipbuilding Co., Wilmington, N. C.
JOHN ADAMS, Liberty ship, Richmond Shipbuilding Corp., Richmond, Calif.
STEPHEN A. DOUGLAS, Liberty ship, Oregon Shipbuilding Corp., Portland, Ore.
PASCAGOULA, C-3 cargo, Ingalls Shipbuilding Corp., Pascagoula, Miss.
CARTER BRAXTON, Liberty ship, Bethlehem-Fairfield Shipyard, Inc., Baltimore, Md.
BENJAMIN HARRISON, Liberty ship, Bethlehem-Fairfield Shipyard, Inc., Baltimore, Md.
COLINA, a tanker, Bethlehem Steel Company, Sparrows Point, Md.
THOMAS MacDONOUGH, Liberty ship, Oregon Shipbuilding Corp., Portland, Ore.
ROBERT MORRIS, Liberty ship, California Shipbuilding Corp., Los Angeles, Calif.
J. L. M. CURRY, Liberty ship, Alabama Dry Dock and Shipbuilding Co., Mobile, Ala.
GETTYSBURG, tanker, Sun Shipbuilding and Dry Dock Co., Chester, Pa.
VIRGINIA DARE, Liberty ship, North Carolina Shipbuilding Co., Wilmington, N. C.
NATHAN HALE, Liberty ship, California Shipbuilding Corp., Los Angeles, Calif.
JOHN JAY, Liberty ship, Oregon Shipbuilding Corp., Portland, Ore.
NANCY LYKES, C-2 cargo, Federal Shipbuilding and Dry Dock Co., Kearny, N. J.
KIT CARSON, Liberty ship, Richmond Shipbuilding Corp., Richmond, Calif.
WILLIAM DAWES, Liberty ship, Oregon Shipbuilding Corp., Portland, Ore.
OCEAN PEACE, cargo, British, Todd-Bath Iron Shipbuilding Corp., South Portland, Me.
OCEAN JUSTICE, cargo, British, Todd-Bath Iron Shipbuilding Corp., South Portland, Me.
ALBERT GALLATIN, Liberty ship, California Shipbuilding Corp., Los Angeles, Calif.
BLUE JACKET, C-2 cargo, Moore Dry Dock Co., Oakland, Calif.
SEAKAY, tanker, Sun Shipbuilding and Dry Dock Co., Chester, Pa.
CHRISTOPHER NEWPORT, Liberty ship, Bethlehem-Fairfield Shipyard, Inc., Baltimore, Md.
PHILIP SCHUYLER, Liberty ship, Oregon Shipbuilding Corp., Portland, Ore.

MOTHER McCONE breaks the bottle on S. S. Robert Morris at Calship yard

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Maine to Mississippi, from California to Maryland. Many small but colorful ceremonies took place. The Virginia Dare was christened with a bottle of wine from the Roanoke Island vineyard, where the first white child in the American colonies was born. On the Pacific Coast, the wife of a shipyard worker, selected by lot, was sponsor, and started the Liberty ship Nathan Hale down the ways. Twelve of the twenty-six ships were from Pacific Coast yards.

Many of the launchings took place during the workmen's lunch hour, a time-saving feature, commended by the Maritime Commission and followed by the builders.

A listing of the ships launched is attached.

Ingalls Launches Another C-3

The S.S. Pascagoula was launched on January 23, 1942, at 2:00 p.m., at The Ingalls Shipbuilding Corporation's Pascagoula, Mississippi, shipyard. This vessel, formerly known as the S.S. American Merchant, was originally constructed for the United States Lines, to operate as a passenger-cargo ship between New York and London. It was renamed by the United States Maritime Commission. Dimensions are as follows:

Length	489 feet
Beam molded	69 feet, 6 inches
Displacement	18,000 tons
Speed	approximately 18 knots

The S.S. Pascagoula is another of Ingalls' 100 per cent all-welded vessels.

S. S. PASCAGOULA launched on January 23

Pennsylvania Shipyard Gets 10 C-1s

The Maritime Commission's "Victory" shipbuilding program was further expanded with award of a contract January 31 to the Pennsylvania Shipyards, Inc., Beaumont, Texas, for the construction of 10 C-1-M type cargo vessels. In the last two weeks the Commission has awarded contracts for 723 additional ships.

This yard, which is now engaged in the construction of 10 C-1 vessels, will complete all 20 ships by the end of 1943, accelerating deliveries on the ships contracted in April, 1941.

The C-1-M type is 5028 gross tons, 413 feet long, and is diesel propelled.

13th Liberty Ship For Oregon S. B. Corp.

The Oregon Shipbuilding Corporation launched its thirteenth Liberty ship February 4 as a production race began between the plant and the Bethlehem-Fairfield Shipyards, Inc., Baltimore.

The ship was the John Jay, christened by Mrs. Harry Morton, wife of a vice president of the corporation.

The Maritime Commission has advised the Portland company it leads the country in ship production.

New Steel Tubing Plant Under Construction

About March 1, construction will begin on the new $350,000 war mate-

A "PEP-EM-UP" SIGN near the entrance of the North Carolina Shipbuilding Corp. yard, Wilmington, N. C.

rials plant of the Russell Products Company in Ontario, Calif.

The factory will manufacture seamless steel tubing for use in the aircraft and shipbuilding industries. When completed the plant will employ more than 125 men.

I. Cline, Glendale contractor, holds the commitment to construct the plant, which will be owned by the Government and leased to the Russell Products Company for five years.

Shipwright's Wife Sponsors a Liberty Ship

Chosen by lot at a drawing conducted by the shipyard workers, Mrs. J. C. Morris, wife of a shipwright in the Terminal Island yard of the California Shipbuilding Corporation, was sponsor on February 5 at the christening of the 10,500 deadweight-ton Liberty ship Nathan Hale.

Basalt Rock Gets Navy "E" Pennant

The Basalt Rock Company of Napa, on February 14 had the unique distinction of being the first Northern California plant to have simultaneous ceremonies covering the award of the famed Navy "E" pennant and a double ship launching.

In making the Navy "E" award to the company for outstanding performance, Captain Claude O. Kell, U.S.N., Supervisor of Shipbuilding, addressed the gathered employees with the statement: "With the Navy 'E' pennant flying from your flagstaff, you tell the world that you're producing for freedom. But you do more than that. You are publicly challenging the slave labor of dictator countries to meet you in a production race. And, if I know anything about American industry and American workmen, you are going to show the world that any factory flying the Navy 'E' can lick any factory flying the swastika any day in any week, any time, anywhere. That's the challenge you're showing to the world."

The award was accepted in behalf of the Basalt Rock Company by **Albert G. Streblow,** president and general manager.

The ships launched were Naval auxiliary vessels designed for service in the bay.

Five in One Day

Five merchant ships are sliding down the ways of as many shipyards to join the American Victory fleet on February 21. Three of these ships are of the standardized Liberty type, one is a C-3 type which will be turned over to the Navy, and the other is a C-1 type. All are cargo vessels of Commission design. They aggregate more than 50,000 deadweight tons.

Fourteen keels were laid for future additions to the merchant marine during the week ending February 21, forecasting the two-a-day schedule for launchings. Here are the ships launched on that date:

S. S. John Marshall, second Liberty ship launched by the Alabama Dry Dock & Shipbuilding Company of Mobile, sponsored by Mrs. Frank M. Dixon, wife of the Governor of Alabama;

S. S. Samuel Chase, Liberty ship, launched by the Bethlehem-Fairfield Shipyard, Inc., of Baltimore, sponsored by Yvonne Dunn, 13-year-old granddaughter of Joseph Bonner, a coordinator for the Maritime Commission. Miss Dunn's home is in New Brunswick, New Jersey;

S. S. William Hooper, Liberty ship, named for a signer of the Declaration of Independence who lived in Wilmington, North Carolina, home of the North Carolina Shipbuilding Company. Miss Helen Pudie Clark, daughter of Congressman Clark, sponsored the launching.

M. S. Cape Romano, C-1 type cargo ship, slid down the ways of the Pennsylvania Shipyards, Inc., at Beaumont, Texas, on more than 7000 pounds of bananas. Mrs. J. Frank Keith, an octogenarian, whose late husband operated sailing vessels along the Texas-Mexican coast, sponsored the ship;

S. S. Card, C-3 type cargo ship, will be turned over to the United States Navy. She is being built by the Seattle-Tacoma Shipbuilding Corp., of Tacoma, Washington.

Lake Union Launches Mine Sweeper

First of a fleet of 135-foot wooden mine sweepers being built in the Northwest area for the British Navy was launched February 20 at the yards of the Lake Union Drydock & Machine Works. One of sixteen ships, representing a cost of about 11 million dollars, has been earmarked for Britain.

This ship was built in a large shed alongside of a new one nearing completion. When she was ready for launching she was skidded into a floating drydock which was then submerged, and the ship floated off.

Barbara Matthes, granddaughter of L. J. Benson, head carpenter foreman for the yard, acted as the sponsor.

Federal Launches Two Destroyers

Two destroyers were launched in a twin ceremony at Kearny, New Jersey, February 20, by the Federal Shipbuilding and Dry Dock Company, a United States Steel Corporation subsidiary. The vessels, the U.S.S. Duncan and the U.S.S. Lansdowne, slid down the ways six months and twenty days after keel laying.

The first vessel launched, the U.S.S. Duncan, was sponsored by Mrs. Dorothy Clark Thayer, and was named in honor of the late Commander Silas

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Duncan, a native of New Jersey, who served in the War of 1812.

The U.S.S. Lansdowne was sponsored by Mr. John Conway Hunt. It was named in honor of Lieutenant Commander Zachery Lansdowne.

Federal Launches Another Lykes C-2

The Federal Shipbuilding and Dry Dock Company, subsidiary of the United States Steel Corporation, launched a cargo vessel for the United States Maritime Commission, and the Lykes Brothers Steamship Company at 11:40 a.m., February 5th.

The ship was christened the S.S. Nancy Lykes by Mrs. Frederica Lykes Thompson of Houston, Texas. The sponsor is the daughter of James M. Lykes, President of Lykes Brothers Steamship Company, Inc.

Of the twenty-one cargo vessels launched by Federal Shipbuilding Company for the United States Maritime Commission, twelve have been built for the Lykes Brothers Steamship Company service. A sister ship of the S.S. Nancy Lykes will be launched in the near future.

Destroyers Launched

Two destroyers, the U.S.S. Nicholas and the U.S.S. Barton, were launched February 1, at the yards of their respective builders, the Bath (Me.) Iron Works and the Fore River plant of the Bethlehem Steel Company, Quincy, Mass.

Mrs. Edward B. Tryon, Lionville, Pa., sponsored the Nicholas, which is named in honor of her great-great-great - grandfather, Major Samuel Nicholas, U. S. Marine Corps. This is the second naval vessel so named.

Federal To Build New Yard

The Federal Shipbuilding and Dry Dock Company has been awarded a Navy contract for the immediate construction of a large number of war ships, according to an announcement of L. H. Korndorff, president of the company.

To meet the order, the yard facilities will be expanded and new ways built on an adjacent site.

Olympia Tugboat Contract

Olympia secured its first major defense industry when Reliable Welding Works announced it had secured a $750,000 contract to build six Navy tugboats this year.

Construction started on a yard with two ship ways across from the city port dock. Approximately 100 men will be employed in the yard.

The tugs will be 75 feet long, all steel welded, and powered with 400-hp diesel motors.

New Yard for Newport News

The Newport News Shipbuilding and Dry Dock Company, Newport News, Va., is to build a new subsidiary yard at Richmond, Va., costing $20,000,000, to fill Navy ship contracts.

This will be the second subsidiary yard of the company, which late last year withdrew from commercial ship construction to fill naval contracts only.

(Page 102, please)

Merchant vessels of over 2000 gross tons launched from American shipyards during January, 1942

Name	Keel Laid	Launched	Type	Gross Tons*	Horsepower*		Owner	Builder
					Steam	Diesel		
Kentucky	8-6-41	1-3	Tanker	9,600	9,000	—	The Texas Co.	Sun S. B. & D. D. Co.
Robert Fulton	9-20-41	1-10	Cargo	6,800	2,500	—	Maritime Commission	Oregon Shipbuilding Co.
Ocean Vulcan	10-2-41	1-14	Cargo	6,800	2,500	—	British Purchasing Com.	Todd-California Shipbldg. Div.
Daniel Boone	7-17-41	1-14	Cargo	6,800	2,500	—	Maritime Commission	California Shipbuilding Corp.
Bogue	10-1-41	1-15	Cargo	8,900	8,500	—	Maritime Commission	Seattle-Tacoma Shipbldg. Corp.
Nathanael Greene	5-22-41	1-17	Cargo	6,800	2,500	—	Maritime Commission	North Carolina Shipbldg. Co.
Kalkay	9-9-41	1-17	Tanker	10,000	12,000	—	Keystone Tankship Corp.	Sun S. B. & D. D. Co.
John Adams	9-17-41	1-18	Cargo	6,800	2,500	—	Maritime Commission	Richmond Shipbldg. Corp.
Jack Carnes	7-17-41	1-20	Tanker	10,500	6,000	—	Sinclair Refining Co.	Federal S. B. & D. D. Co.
Ocean Valour	10-2-41	1-20	Cargo	6,800	2,500	—	British Purchasing Com.	Todd-California Shipbldg. Div.
Stephen A. Douglas	9-18-41	1-21	Cargo	6,800	2,500	—	Maritime Commission	Oregon Shipbuilding Co.
American Merchant	1-7-41	1-23	Pass.-Cargo	10,000	8,500	—	Maritime Commission	Ingalls Shipbldg. Corp.
Colina	7-31-41	1-24	Tanker	9,800	12,000	—	Socony-Vacuum Oil Co.	Bethlehem-Sparrows Pt. Shipyard
Carter Braxton	9-3-41	1-24	Cargo	6,800	2,500	—	Maritime Commission	Bethlehem-Fairfield Shipyard, Inc.
Benjamin Harrison	9-27-41	1-24	Cargo	6,800	2,500	—	Maritime Commission	Bethlehem-Fairfield Shipyard, Inc.
Robert Morris	9-11-41	1-28	Cargo	6,800	2,500	—	Maritime Commission	California Shipbuilding Corp.
Thos. MacDonough	10-21-41	1-28	Cargo	6,800	2,500	—	Maritime Commission	Oregon Shipbuilding Co.
Ocean Venus	10-27-41	1-31	Cargo	6,800	2,500	—	British Purchasing Com.	Todd-California S. B. Div.
J. L. M. Curry	7-28-41	1-31	Cargo	6,800	2,500	—	Maritime Commission	Alabama D. D. & S. B. Co.
Samuel Adams	9-15-41	1-31	Cargo	6,800	2,500	—	Maritime Commission	California Shipbuilding Co.
Totals			20	154,000	91,000			
Total launched in 1941			127	990,964	577,090	128,556		
Launchings month of Jan. 1941			6	48,117	24,050	11,500		

Seagoing merchant vessels of over 2000 gross tons completed by American shipyards during January, 1942

Name	Type	Gross Tons	Horsepower		Owner	Builder
			Steam	Diesel		
Calusa	Tanker	9,920	12,000	—	Socony-Vacuum Oil Co.	Bethlehem-Sparrows Point Shipyard
E. W. Sinclair	Tanker	10,907	6,600	—	Sinclair Refining Co.	Federal S. B. & D. D. Co.
Sinclair H—C	Tanker	7,874	4,400	—	Sinclair Refining Co.	Bethlehem Steel Co., Quincy, Mass.
Bulkoil	Tanker	8,071	9,430	—	National Bulk Carriers, Inc.	Welding Shipyards, Inc.
Flagship Sinco	Tanker	10,793	6,600	—	Sinclair Refining Co.	Bethelehem Steel Co., Quincy, Mass.
John D. Gill	Tanker	11,641	6,030	—	Atlantic Refining Co.	Sun S. B. & D. D. Co.
Examiner	Cargo	6,736	8,800	—	American Export Lines, Inc.	Bethlehem Steel Co., Quincy, Mass.
Marina	Cargo	5,086	4,400	—	A. H. Bull S. S. Co.	Pusey & Jones Corp.
Charles Carroll	Cargo	7,191	2,500	—	Maritime Commission	Bethlehem-Fairfield Shipyard, Inc.
Francis Scott Key	Cargo	7,191	2,500	—	Maritime Commission	Bethlehem-Fairfield Shipyard, Inc.
Meriwether Lewis	Cargo	7,176	2,500	—	Maritime Commission	Oregon Shipbuilding Co.
China Mail	Cargo	8,616	—	7,500	Maritime Commission	Sun S. B. & D. D. Co.
Ocean Valley	Cargo	7,174	2,500	—	British Purchasing Com.	Todd-California Shipbuilding Div.
Ocean Vestal	Cargo	7,174	2,500	—	British Purchasing Com.	Todd-California Shipbuilding Div.
Ocean Vesper	Cargo	7,174	2,500	—	British Purchasing Com.	Todd-California Shipbuilding Div.
Totals	15	172,724	73,260	7,500		

NOTE: Merchant vessels acquired before completion by the Navy of ship department are excluded from these tabulations by the American Bureau.

Comparison of DIRECT and ALTERNATING CURRENT

(Continued from page 63)

When steam turbine driven, reduction gears are needed.

COLLECTOR RINGS: Rings needed only for three-wire generators. They must have capacity for the total unbalanced current, usually 10 or 25 per cent of normal amperes of generator. Rings are at terminal generator voltage.

FIELDS: Fields, field poles, always stationary.

Dc generators generally use own dc output for self-excitation of field and seldom need an external exciter.

SERIES OR COMPOUND FIELDS: Because of stationary field, a series winding (easily put on over the shunt) can be used to overcome the field flux bucking action of the armature magnetism.

Thus, increasing load current gives increasing field ampere-turns, or maintains generated voltage nearly constant.

COMMUTATING FIELDS INTO POLES: Always needs inter-pole or commutating fields for sole purpose of making nearly sparkless pick-up of load current from commutator.

VOLTAGE REGULATION: Voltage is kept to no load values at load by boosting action of series field.

Without series, field voltage would invariably drop from no load to full load to more than 10 to 20 per cent.

Voltage holds nearly constant at all loads. Practical marine installations show voltage varying up to 10 per cent, perhaps more, unless manually adjusted. Generators can be compounded to as narrow voltage variation as one or two per cent, but engine speed drop and other factors usually give wider variations.

EXCITER: Seldom needed. Self-excited field will take from one to two per cent of armature current capacity.

GENERATOR FIELD RHEOSTAT: Always used to adjust voltage of generator to exact value needed. Will have one setting or position when generator is cold, and another when hot. Is used to facilitate parallel operation, and when in parallel, to distribute the load on the several generators as required.

Cannot operate without this device.

EFFECT OF RAISING SPEED: Raises voltage, unless readjusted manually.

Lowers field required for normal volts.

Lowers excitation on ac current to transformers connected to slip rings of three-wire generators.

EFFECT OF LOWERING SPEED: Same as for raising speed except in opposite direction.

1800 rpm in sizes above this when steam turbine drive. No gears needed.

COLLECTOR RINGS: Two rings are always needed to carry the field current to the field which revolves. Need carry only dc field current or one to two per cent of load capacity kw. Rings are at only 125 volts dc, sometimes 250 volts.

It would be impractical to build rings for the armature volts, amperes and speeds of the signs over 1000 kw. Thus, stationary armature is principal feature of ac machines.

FIELDS: Fields always rotating, except less than 25 kw. Two- and four-pole construction practical in forged solid steel rotors, milled coil slots to get 3600 and 1800 rpm in large sizes. Always requires external source of dc power to supply fields. Thus must have exciters.

SERIES OR COMPOUND FIELDS: There is no practical way to add to the shunt field magnetizing effect by addition of series load carrying turns on field. First, because the load current is alternating current, cannot use for fields. Secondly, would need large, load-carrying slip rings at terminal voltage; impractical to build.

COMMUTATING FIELDS INTO POLES: Not needed as no commutator required.

VOLTAGE REGULATION: Voltage will drop from normal value at no load to about 60 to 70 per cent normal at full load current. No practical way to build self-voltage support into the machine. Field current and voltage must be increased by some manual or external automatic means.

Thus the automatic voltage regulator is necessary. May operate from voltage, or current, or both.

Automatic voltage regulators usually hold voltage to less than two per cent variation and can be adjusted for narrower regulation than this. Variations of speed of prime mover, engine, does not change voltage.

Any attempts to operate without automatic voltage regulators is only an unsatisfactory compromise. Never to be recommended.

EXCITER: Always needed. May take excitation current from ship's dc power; or dc generator, called exciter, which is used only for the ac generator. It may be motor driven, or belted, or geared, or driven direct connected to ac generator. Will have one to two per cent of generator kw capacity, but at 125, sometimes 250 volts.

GENERATOR FIELD RHEOSTAT: Many generator installations have generator field rheostat. They are seldom used and many new installations, having separate exciter for each generator will have no generator field rheostat. All installations will invariably have an exciter field rheostat. By adjustment of this small rheostat, the voltage of exciter, hence generator field current is adjusted. The automatic voltage regulator always works on the exciter field in holding the generator voltage constant; is thus a rapidly varying exciter field resistor.

Where excitation of several generators comes from one dc generator, then field rheostats are necessary.

EFFECT OF RAISING SPEED: Raises voltage, which is automatically readjusted by regulator.

ALTERNATING CURRENT

(Continued from right hand column)

Raises frequency. No adjustment for this in generator. Thus raises speed of all motors, regardless of normal voltage being held. Exception, small motor like vacuum cleaner type.

Lowers field amperes for normal volts.

Lowers excitation ac current to transformers, even at normal volts.

EFFECT OF LOWERING SPEED: Same as for raising speed, except in opposite direction.

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Stabilization of War-Risk Insurance

ADOPTION OF A PLAN for stabilization of war-risk insurance rates on merchant vessels was announced February 2 by the Maritime Commission following discussions between the Commission, representatives of the American Marine Insurance Syndicate and other commercial marine underwriters.

The general effect of the plan will be that war-risk rates will be on a monthly basis, a departure from the existing practice of quoting daily rates. As a result shipowners will be able to determine their war insurance charges in advance on a month to month basis.

This program has been adopted by underwriters in recognition of the important factor which war-risk insurance rates play in operating costs of vessels and to meet the desire of the Commission to stabilize these costs as far as possible, in particular where such costs are a basis for freight rate surcharges.

Under the announced plan, a schedule of war-risk rates will be published as of the 25th of each month by commercial underwriters, applying to all vessels sailing from United States ports in a regular trade during the following month. These rates will be submitted to the Maritime Commission in advance of publication and will be subject to approval by the Commission.

When the rates are not approved by the Commission, shipowners will be able to obtain insurance directly from the Commission in accordance with legislation passed in June, 1940, amending the Merchant Marine Act of 1936 and authorizing the Commission to write war-risk insurance whenever, in the opinion of the Commission, such insurance "cannot be obtained on reasonable terms and conditions." A fund of $40,000,000 has been set up for this purpose.

While under the plan it is possible rates will be changed monthly, it is understood underwriters contemplate maintaining as stable a level as changing wartime conditions may permit.

The following rules have been adopted by the American Marine Syndicate in connection with the new basis of operations:

1. With respect to vessels insured on a round-trip basis, underwriters will publish on the 25th of each month a schedule of rates which, if accepted by the shipowner, will be applicable to all vessels sailing during the following month on voyages coming within the scope of the schedule. Such rates may be accepted by the shipowner prior to the close of the second business day following the 25th of the month, and if accepted will be fixed and not subject to variation up or down.

2. With respect to vessels confined to western hemisphere waters, there will be available, as an alternative to the foregoing, insurance for periods of 60 days, regardless of the number of trips involved. Rates for such coverage will be made public as of the 25th of each month, and, if accepted prior to the close of the second business day following the 25th, they will provide insurance for a period of 60 days from the first of the following month.

3. Except where one or more rates in the schedule published by underwriters are declared unreasonable by the U. S. Maritime Commission, an operator—to avail himself of this facility—must accept the schedule in its entirety for all of his vessels sailing on voyages within the scope of the schedule during the ensuing month. Where one or more rates in the scehdule are declared unreasonable by the U. S. Maritime Commission, operators may avail themselves of the rates named by the Maritime Commission on the voyages involved and of the balance of the schedule named by the underwriters.

4. With respect to fleets where rates named as aforesaid are not accepted by the operator within the time stipulated, underwriters will continue to name rates as heretofore on a day-to-day basis, with no guarantee that market rates or Commission rates will not change with changing conditions.

5. Underwriters have requested the Commission to point out that this basis represents a departure from their established practice in an endeavor to provide the shipowner with stability of war-risk rates, and that its success depends upon the cooperation of the shipowner. Accordingly, underwrtiers reserve the right to discontinue its application at some future date if such action appears necessary.

Insurance Notes

As the result of operations for 1941, **Fireman's Fund Insurance Company's** assets totaled $48,024,000, with a net premium income of $21,606,000. Both figures are the highest in the company's history. The gain in income of $3,565,000 over the preceding year was made principally by an increase of $1,993,000 in marine business and $1,226,000 in fire premiums.

This information was given to shareholders at the company's 79th annual meeting held in San Francisco on Tuesday, February 3.

The following directors were elected: **Colbert Coldwell, W. W. Crocker, Edward L. Eyre, Mortimer Fleishhacker, A. P. Giannini, Charles C. Hannah, J. B. Levison, Charles K. McIntosh, C. O. G. Miller, Henry D. Nichols, Charles R. Page, Henry Rosenfeld,** and **Franklin A. Zane.**

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INSPECTION FORCE AT CONSOLIDATED STEEL CORPORATION

Left to right: R. Harper, Principal Electrical Inspector; D. P. Nilan, Machinery Inspector; W. R. Boyd, Principal Hull Inspector; Jess Hanson, Senior Machinery Inspector; T. W. Mearns, Principal Machinery Inspector; Carl Long, Machinery Inspector; J. A. George, Senior Machinery Inspector; and John Delaney, Hull Inspector

PACIFIC COAST INSPECTION FORCE

Repeated by . . . Popular Demand

One week off the press, extra copies of the January issue of Pacific Marine Review began to dwindle away rapidly—in one more week, we put up the sign "completely sold out."

The feature that sold this edition was the picture section of the U. S. M. C. Inspection Force of the Pacific Coast. As a tribute to these men, we are breaking precedent by repeating this section.

The section includes the inspectors from the following yards, in this respective order: Consolidated Steel Corporation, Moore Dry Dock Co., Richmond Shipbuilding Corp., California Shipbuilding Corp., Seattle-Tacoma Shipbuilding Corp. (Plant No. 1), and Oregon Shipbuilding Corporation.

To those who were disappointed in January, this repetition will give ample opportunity to get copies. However, the Circulation Department says, "Get your order in early." Remember the January landslide!

↑

INSPECTION FORCE AT MOORE DRY DOCK CO.

Left to right: P. R. Fresia; C. L. Nelson; C. R. Lord; Wm. Greig, Principal Hull Inspector; J. M. Carroll; M. Visintin, Principal Machinery Inspector; J. R. Spencer; A. J. Christie; A. J. Sahnestock; H. O. Hansen; J. A. McMahon; and E. McKarley

●

INSPECTION FORCE AT RICHMOND SHIPBUILDING CORP.

↓

Left to right—Front row: John Daly; Chas. Gallagher, Welding Inspector; George Cleary; Hollis Hughes; Alfred Fenton, Shipyard Inspector (hull); Harry Levy, Shipyard Inspector (hull); Harry Kelly, Shipyard Inspector (machinery); Floyd Mangus. Second row: Wm. Anderson, Senior Hull Inspector; Harold Ralph, clerk; Thomas Carter, clerk; Hugh Carr; Earle Horne; Arthur Nield. Back row: David Robertson; Wm. Hasonfuss, Senior Machinery Inspector; Adolph Thompsen, Senior Electrical Inspector; Wm. E. Russell, Principal Machinery Inspector; Chas. E. Stewart, Principal Hull Inspector; David Stewart, Jr.

INSPECTORS AT CALIFORNIA SHIPBUILDING CORPORATION

↑ Left to right—First row: J. Hoogerwerf; James Stewart, Principal Hull Inspector; R. L. Westmoreland; Julian M. Corrie; George Fenton; Edwin C. Sherman; Noel B. McCarry; and N. M. Gaskill. Second row: Lee G. Clements; George F. Staub, Principal Machinery Inspector; and Wm. Harrison. Third row: Prescott H. Smith; E. Z. Humphrey, Coordinating Hull Inspector; and A. J. Bataiff. Fourth row: Henry Stern, E. G. Bergstrom, B. L. Davis, John L. Walker, and Jeremiah J. Camby

●

INSPECTORS AT WESTERN PIPE AND STEEL COMPANY

↓ First row (left to right): Eustace Bauer, George Jones, Wm. H. Griffin, Wm. P. Manuell, Wm. Paine, David Jones. Last row: Eugene Knowles, Walter Norin, Herman Quarg, Leslie Lewis, Wm. McKenzie, George Downie, Alfred Bunker, Wm. Dwyer

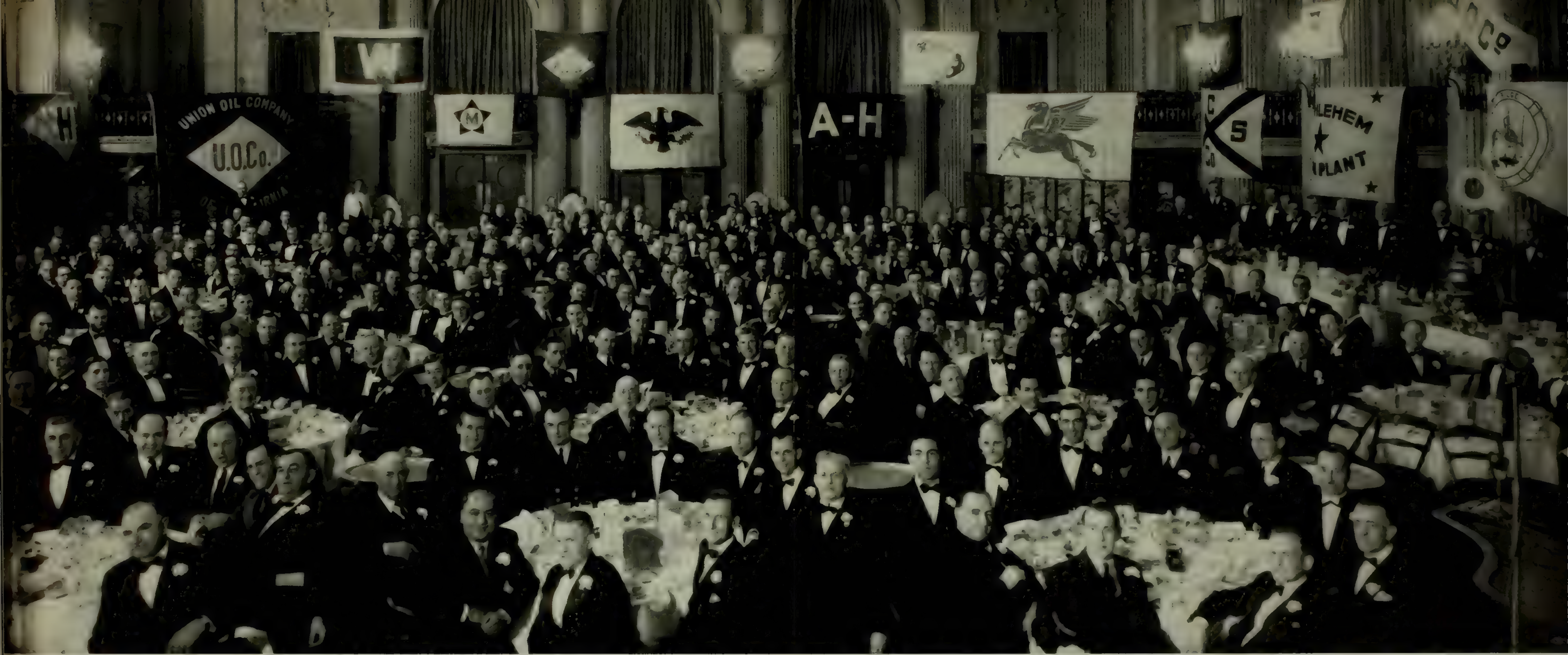
INSPECTORS AT SEATTLE-TACOMA SHIPBUILDING CORP.

↑ Left to right: James M. Craig, Senior Hull Inspector; Edward A. Mortensen, Hull Inspector; Allen T. Banfield, Assistant Clerk-Stenographer; James W. Hare, Senior Electrical Inspector; Paul N. Mulvany, Principal Machinery Inspector; Russell H. Fuller, Hull Inspector Trainee; David Neilson, Principal Hull Inspector; Robert E. Bishop, Assistant Clerk-Stenographer; Lloyd C. Karlson, Hull Inspector; William S. Barr, Assistant Machinery Inspector

◆

INSPECTORS AT OREGON SHIPBUILDING CORPORATION

↓ Left to right: Thomas S. Lydon, Shipyard Inspector (hull); Peter J. Thrall, Shipyard Inspector (hull); Herbert A. Brown, Junior Hull Assistant; Albert Johnson, Shipyard Inspector (outfitting); Jack Lukanovic, Assistant Hull Inspector; Earl W. Bateman, Assistant Hull Inspector; W. J. Muirhead, Acting Senior Hull Inspector; W. S. Smith, Principal Hull Inspector; H. P. Stevens, Principal Machinery Inspector; Wm. A. Correia, Senior Machinery Inspector; Albert J. Frasier, Acting Senior Machinery Inspector; Edward D. Ring, Associate Machinery Inspector; Henry N. Hottendorf, Shipyard Inspector (machinery); Chester L. Owen, Shipyard Inspector (machinery); Hal Kleid, Assistant Machinery Inspector; Peter Muntz, Shipyard Inspector (machinery); James N. Dunn, Assistant Machinery Inspector



Bilge Club Get-together

by Paul Faulkner

The Fourteenth Annual Banquet held at the Biltmore Hotel, Los Angeles, February 14

Smashing all records for attendance, 384 hardy souls attended the 14th Annual Bilge Club Banquet February 14 at the Biltmore Hotel in Los Angeles. Every phase of Pacific Coast maritime activity was represented in the huge throng that enjoyed all features of the lavish repast and accompanying entertainment.

So here goes a hearty "Congratulations" to Bilge Club President and General Chairman John R. Eidom. Another big cheer for the gala evening goes to Captain T. W. Peters, in whose capable hands was entrusted the procurement of suitable and copious entertainment. The good Captain trotted out a two-hour scintillation of talent and amusement numbers that kept the entire ship company enthralled in appreciation and delight. Among the guests were a number of U. S. Naval and U. S. Coast Guard officers.

In course of the evening President Eidom announced that the Bilge Club had just purchased $4,000 worth of Defense Bonds!

Since it was Valentine's Day, the "Bilge Club Beauties" put their heart right in their work, presenting several especially arranged musical and dancing numbers dedicated to the men of the sea.

Again, a big hand for the committee chairmen. They were:

John R. Eidom, General Chairman
(set a high mark to aim at!)

Captain T. W. Peters, Entertainment
(that was Sump'n!)

John E. Marshall, Attendance
(smashed a record!)

J. M. Costello, Decorations
(should be decorated himself!)

Ray Mitchell, Dinner
(and what a repast!)

James G. Craig, Refreshments
(at every point)

J. J. Buntin, Reception
(all hands were white carnationed, a badge of entry)

L. H. Connor, Secretarial
('twas extra shift for him)

E. J. McKee, Finances
(we already talked about the $4,000 purchase of War Bonds)

New Mackay Marine Super

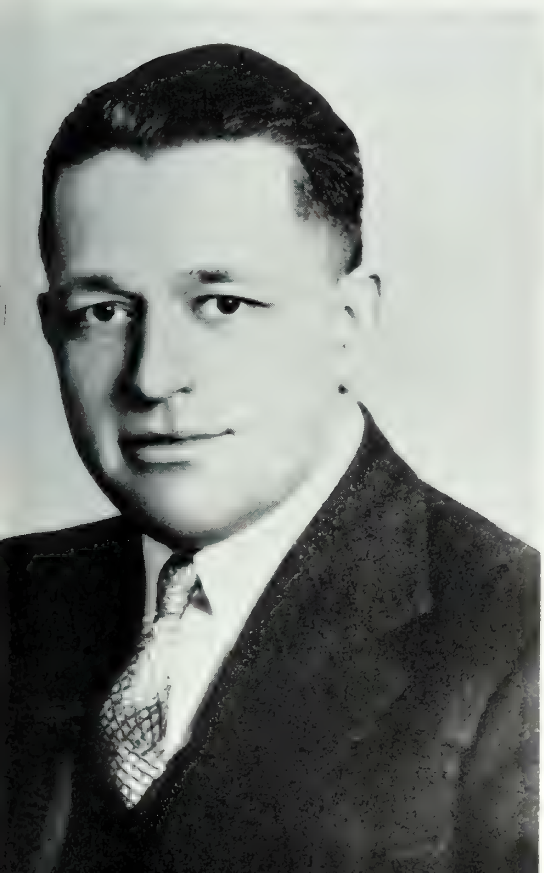
The announcement that **Walter V. Russ,** manager, Marine Division of Mackay Radio and Telegraph Company, has appointed **G. G. Thommen** as marine superintendent of Mackay's Pacific Division is of more than casual interest to shipping men on the Pacific Coast, for both men have an exceptionally wide acquaintance and both have contributed in a major way to the development and extension of marine radio service in the Pacific region.

Mr. Russ and Mr. Thommen joined Mackay Radio in the same year, 1933, at Portland and Seattle, respectively. Each had had extensive experience in radio including the technical and commercial branches of the industry. Both men shared a common "yen" for radio work at sea and so marine radio became their permanent field.

When Admiral Luke McNamee, Mackay Radio president, needed a man in 1937 to head up the expansion of his marine service in the east, he turned to the man who was doing such an outstanding job of expanding Mackay Radio service on the Pacific Coast, and that was W. V. Russ. Mr. Russ carried on from there in the matter of expanding for Mackay Radio with the following results: organized the nation-wide marine activities into an operating division concentrating entirely on this vital phase of the company's business and he now heads this division, greatly increased the number of ships out of Atlantic and Gulf ports using Mackay Radio equipment and made certain important contributions to the design of this equipment which is highly regarded in the shipping world. As manager of the Mackay Marine Division, Mr. Russ has established additional marine service stations in strategic ports and has enlarged existing stations to develop an equipment and maintenance service which is now more vitally useful than ever before.

The appointment of Mr. Thommen as marine superintendent on the Pacific Coast was as logical a choice as Mr. Russ' selection of Admiral McNamee back there in 1937. Mr. Thommen has been in charge of Mackay's marine operations in the Puget Sound region and has made an impressive record for his company in that area.

G. G. THOMMEN
newly appointed Marine Superintendent, Pacific Division, Mackay Radio and Telegraph Company



WALTER V. RUSS
Manager, Marine Division of Mackay Radio and Telegraph Company

Haviside Company In Superb New Setting

The slogan "Growing with San Francisco" can be aptly applied to the Haviside Company, whose brand new ship chandlery headquarters at 40 Spear Street is one of the finest "streamlined" maritime establishments in the country.

The enlarged quarters, incorporating the executive offices and all departments, chandlery, sail loft and rigging, is three times larger than the former establishment at 56 Steuart Street.

The Haviside Company is one of the oldest firms of its kind on the Pacific Coast. Sixty-three years ago, in 1879, at 25 Spear Street, where the Southern Pacific Building now stands and only a stone's throw from the new location, business was first started by the late J. J. Haviside, father of H. T. (Harry) Haviside, the present president.

Since the firm was founded, it has never shifted its location more than a block during the past sixty-three years. In 1895, the offices were moved from 25 Spear Street to 70 Steuart Street; and then in 1900, the headquarters were moved to 56 Steuart Street, where they were maintained until the present new building was completed.

This establishment of the new headquarters also marked the Golden Anniversary of Harry Haviside with the firm, his first and only "job"!

Today, in his well-appointed offices, his chief aides are his two sons, Russell and B. L. "Tote" Haviside, vice president and treasurer, respectively, with H. H. Brann as secretary.

The firm's headquarters have always been the mecca for men of the sea from the days when steamships were "just aborning," and water-borne commerce was carried in fast and romantic clippers. Down through the years this tradition has continued and it is a rare day that a skipper, chief engineer or mate from some part of the world cannot be found visiting the Haviside offices.

Oldtimers will recall that in 1906 the Haviside Company at 56 Steuart

Beautifully appointed, the reception foyer, executive and general offices are the modern word!

Right: A section of the s
cious sail loft which occu
the entire upper floor
Haviside Building

The "store" is an always interesting stockroom of chandlery items

Street was devastated by the earthquake and fire. However, it was quickly rebuilt.

The up-to-the-minute ship chandlery department occupies the entire ground floor with the exception of the area devoted to the executive and business offices. On the second floor are the sail loft and rigging department. The new headquarters are a tribute to President Haviside, who, with unerring judgment, foresaw the trend and the demands that would be made by the Coast defense program.

This long-range forecast, taken several years back, resulted in the company securing new barges, trucks and cars. The company owns and operates the Haviside Derrick Barge No. 4, only steel vessel of its kind on the Pacific Coast, with a lifting capacity of 100 tons. They also operate the Derrick barges Nos. 2, 3 and 5.

Down through the sixty-three years, Haviside Company, which at one time was also known as Haviside, Withers and Davis, has kept abreast of marine development.

Today's new headquarters, with its experienced staff of men ashore and afloat, its seagoing and shore-side equipment, is playing a vital role in the prosecution of the war.

They Cover the L. A. Waterfront!

THIS TIME THE SEA TRIALS OF JOHN C. FREMONT

Port to Starb'd, front, left: Paul Faulkner of Pacific Marine Review; front, right: Dave Gershon. Standing, left: Joe H. Wadsworth, Industrial Relations Manager, California Shipbuilding Corporation, who signed on as purser of the John C. Fremont for her trials; William Conway, Charlie Crawford, C. D. Wood, and Brooks Barnes

U. S. Steel New Directors

The elections of **John A. Stephens,** director of industrial relations, and **Roger M. Blough,** general solicitor, as members of the Board of Directors, and Executive Committee of United States Steel Corporation of Delaware were announced February 11 by **Benjamin F. Fairless,** president.

Mr. Stephens, who is responsible for the general direction of the industrial relations activities of United States Steel Corporation of Delaware, and Mr. Blough, whose appointment as general solicitor in charge of all legal matters for the United States Steel Corporation of Delaware was announced on February 3, 1942, will work directly under Mr. Fairless.

The appointments of **W. Everett McLaine,** as director of public relations, and **Edward C. Myers,** as assistant director of public relations for United States Steel Subsidiaries in the Pittsburgh district, were announced as effective February 16. At the same time, it was announced that **Walter E. Camp** will become assistant to J. Carlisle MacDonald, assistant to the chairman of the Board of Directors of United States Steel Corporation in New York, who, for the Chairman of the Board of Directors, exercises general direction of public relations activities of the corporation and its subsidiary companies.

Mariners Club

Capt. A. T. Hunter, skipper of the good ship Mariners Club, piped all hands on deck for the February 4th luncheon meeting held at the St. Julian moorings on Battery St.

A goodly ship's company responded though the weather was rough around the scuppers. President Hunter, following his policy of bringing aboard colorful characters of San Francisco's waterfront annals, introduced as speaker of the day Capt. Leighton Robinson, retired Shipping Commissioner of this port.

"Robbie" was right at home with his many shipmates of the club and regaled them with anecdotes and experiences which were flavored with real old-time Embarcadero atmosphere.

As usual, the meeting was well attended by marine men who always look forward to these monthly get-togethers as a pleasant respite from the cares of the hour.

Propeller Club News

"Labor Requirements of the All-Out War Program" was the theme of a timely talk by **Almon Roth,** president of the San Francisco Employers Council, at the February 11th meeting of the Propeller Club, Port of San Francisco.

It was a comprehensive analysis of labor-employer relations which have arisen from the present emergency, and the subject proved interesting and informative.

The club took over the Red Room of the Fairmont Hotel for this special occasion, and it seemed like old times to be back in the surroundings which still echo to memories of the big Convention held last October.

President Arthur Poole conducted the meeting and introduced our guest speaker.

Note:

Clyde Williamson, chairman of the House Committee, tells us as we go to press that the next meeting will be held on March 11th.

Save the date, fellow Propellers. A good program is being arranged.

At New York

The Propeller Club of the United States, Port of New York, presented its Annual Winter Stag Party at the Hotel Astor Roof on Thursday evening, February 19. Supper, preceded by a reception, was accompanied by gala entertainment. The proceeds from this affair ($5.00 a ticket) were donated to the Marine Division of the American Red Cross.

Port of Tacoma

The February dinner and meeting of the Propeller Club, Port of Tacoma, was held Wednesday evening, the 18th, at the University-Union Club, with the cocktail hour at 6:30 p.m. and dinner at 7:15 p.m.

After a fine dinner, the meeting was called to order by President Perry "Dinty" Moore, who immediately introduced guests and new members. The new members introduced were: Donald E. Peattie and Webster B. Anderson of the Seattle-Tacoma Shipbuilding Corp.; and J. J. Martin of the Mat Opgenorth Co., Washington Bldg., Tacoma. Andy Morrell of the Seattle-Tacoma Shipyard was the guest also introduced.

President Moore also spoke briefly in connection with the letters which were sent out by our club under his name to Washington, D. C., and New York City, relative to our efforts in obtaining Army and Navy business for the Tacoma terminals. He mentioned that the results of his correspondence were gratifying and that he was sure business would be coming into our harbor very soon.

The entertainment part of the evening was given over to the showing of the sound picture in technicolor, "Trans-Pacific," courtesy of the Pan American Airways. This picture, very beautiful and very instructive, showed a trip by Clipper from San Francisco to Honolulu, Midway, Wake, Guam, Manila and Hongkong.

Immediately after the showing of the film, the meeting was adjourned by our president.

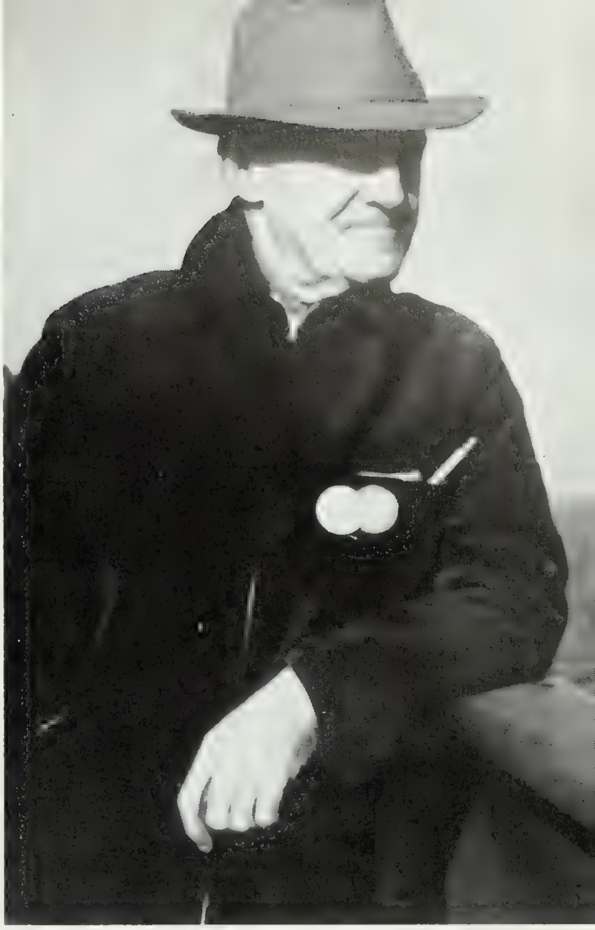
CHAS. C. CRAMP, *Secretary.*

Tode Heads Board of Maritime Academy

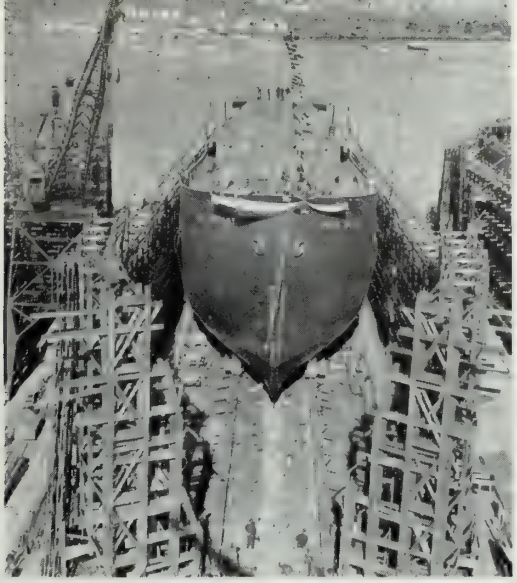
Arthur M. Tode, Honorary President of the Propeller Club of the United States, was elected chairman of the Board of Visitors of the New York State Merchant Marine Academy at the annual meeting of the Board on February 19, succeeding Captain M. L. Pittman. The New York State Merchant Marine Academy, located at Fort Schuyler, New York, and commanded by Captain J. H. Tomb, USN (Ret.), dates back to 1875, and is the oldest of five such institutions training officers for the American Merchant Marine.

The election of Mr. Tode to Chairman of the Board culminates a schoolship saga of just thirty years, as he was graduated from the training ship Newport of the old New York Nautical School with the class of 1912. After the last war, he served as chief engineer of the same vessel for four years; in 1929 he was president of the Alumni Association of the Academy; and the following year, President Roosevelt, then Governor of the State of New York, appointed him to the Board of Visitors, of which body he has now been made chairman. Serving with Mr. Tode are other well-known maritime figures who represent their respective associations:

Thomas F. Baker, New York Board of Trade, Inc.; **H. Wallace Stock,** Albany Chamber of Commerce; **Lewis L. Smith,** '06, Alumni Association; **Carl F. Vander Clute,** '21, The Merchants' Association of New York; **Capt. P. B. Blanchard,** Chamber of Commerce of the State of New York; **Cornelius H. Callaghan,** The Maritime Association of the Port of New York; **R. A. Lovelace,** Buffalo Chamber of Commerce; **Frank J. Taylor,** American Merchant Marine Institute, Inc.; **Edmond J. Moran,** National Board of Steam Navigation; **Capt. M. L. Pittman,** '07, Marine Society of New York; **Charles Hopkins,** Secretary, Merchant Marine Academy.



OFF THE CALIFORNIA COAST—Trial run of the John C. Fremont—A. O. (Bert) Pegg, who had 35 years' marine experience with Union Oil Company of California, and retired in 1938 as Superintending Engineer of the Union Oil tanker fleet, is back in harness—now Outfitting Manager of the California Shipbuilding Corporation



PROGRESS IN *American Shipyards*

★ Asterisk indicates new listings.

Pacific Coast

ALBINA ENG. & MACHINE WORKS, Inc.
Portland, Oregon

New Construction:

Hulls Nos. 51-59, nine 165′ steel submarine chasers for U. S. Navy. Six keels laid up to January, 1942. Launching date, No. 51, January, 1942.

ANDERSON & CHRISTOFANI
San Francisco, Calif.

New Construction:

Six 97′ AMC coastal mine sweepers for U. S. Navy.

One 60′ purse seiner for S. Piazza.

ASSOCIATED SHIPBUILDERS
Seattle, Wash.

New Construction:

Four small seaplane tenders for delivery to Puget Sound Navy Yard.

Six wooden mine sweepers for delivery to U. S. Navy at Puget Sound Navy Yard.

Eight steel mine sweepers for U. S. Navy.

ASTORIA MARINE CONSTRUCTION CO.
Astoria, Ore.

New Construction:

Four 135′ wooden diesel-powered mine sweepers for U. S. Navy. Delivery in 14 months.

BASALT ROCK CO., INC.
Shipbuilding Yard—Napa, Calif.

New Construction:

Hull No. 23, fuel oil tanker, for delivery to Mare Island Navy Yard. 235′ x 37′ x 19′3″. Contract awarded by Navy Dept., Bureau of S. & A., Washington, D. C. Keel laying date, August, 1941. Launching date, December, 1941. Delivery date, May 30, 1942.

Hull No. 28, self-propelled lighter for U. S. Navy. 132′6″ x 30′ x 12′4″. **Delivery date, February 15, 1942.**

BERKELEY STEEL CONSTRUCTION CO.
Berkeley, California

New Construction:

One all-welded utility diesel-electric stern wheeler for U. S. Engineers. 102′ x 26′ x 5′.

BELLINGHAM M. R. & B. B. CO.
Bellingham, Wash.

New Construction:

Hulls Nos. 17-20, four mine sweepers for the U. S. Navy. Keel laying dates, No. 17, July 16; No. 18, July 22; No. 19, July 26; No. 20, July 31, 1941.

Two hulls, 183′, salvage vessels for U. S. Navy.

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Division—San Francisco Yard
San Francisco, Calif.

New Construction:

Hulls Nos. 5366-5367, two destroyers, DD459-DD460, for U. S. Navy. Keels laid January 13, 1941. Launching date, No. 5366, October 30; No. 5367, November 29, 1941.

Hulls Nos. 5368-5383, sixteen destroyers, DD526-DD541. Keel laid, No. 5368, November 29, 1941.

Hull No. 5384, barge YB-11, for Young Bros., Ltd., Honolulu, T. H. Keel laid, January 19, 1942. **Launched February 16, 1942.**

Hulls Nos. 5386-5389, four cruisers, CL95-CL98. Keel laying dates, No. 5386, July 13; No. 5387, August 1, 1941.

Hulls Nos. 5390-5396, seven destroyers, DD605-DD611. Keel laying dates, Nos. 5390, 5391, March 25 and 28, 1941. **Launching dates,** No. 5390, January 15; **No. 5391, February 12, 1942.**

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Division—San Pedro, Calif.

New Construction:

Hulls Nos. 9001-9004, four destroyers, DD544-DD547.

Hulls Nos. 9007-9012, six destroyers, DD612-DD617. Keel laying dates, Nos. 9007, 9008, May 1, 1941; Nos. 9009, 9010, May 29, 1941.

BIRCHFIELD BOILER CO., INC.
Tacoma, Washington

New Construction:

Hulls Nos. 432-437, six towboats, design V2-ME-A1, for U. S. Maritime Commission. **Delivery dates, No. 432, March 6;** No. 433, April 4; No. 454, May 5; No. 455, June 4; No. 456, July 4; No. 457, August 3, 1942.

CALIFORNIA SHIPBUILDING CORP.
Wilmington, California

New Construction:

Hulls Nos. 1-55, fifty-five EC-2 type cargo vessels for U. S. Maritime Commission. Fifteen keels laid up to January, 1942. Launching dates, No. 1, September 27; No. 2, October 26; No. 3, November 16; No. 4, December 3; No. 5, December 21, 1941; No. 6, January 14, 1942.

One hundred nine EC-2 type cargo vessels for U. S. Maritime Commission.

CAMPBELL MACHINE CO.
San Diego, Calif.

New Construction:

Hull No. 69, 450-ton fishing boat for A. Tavaras & Co. 110′ x 26′ x 12′; Union diesel. Keel laid June 1, 1941. **Completion date, March 1, 1942.**

Hull No. 70, 550-ton fishing boat for G. Vattuone & Co. 128′ x 12′6″; Union diesel. Keel laid June 15, 1941. **Launching date, February 11, 1942.**

Conversion:

★ **Two purse seine vessels, Sea Tern and Jackie Jo,** diesel powered, to Naval patrol boats.

COLBERG BOAT WORKS
Stockton, Calif.

New Construction:

Three large wooden mine sweepers for U. S. Navy.

One 39′6″ L. O. A. survey inspection boat for U. S. Army Corps of Engineers.

COMMERCIAL IRON WORKS
Portland, Ore.

New Construction:

Seven steel mine sweepers for U. S. Navy.

Four fleet tugs for U. S. Navy.

Four steel submarine chasers for U. S. Navy.

CONSOLIDATED STEEL CORP., LTD.
Los Angeles, Calif.

New Construction:

Hulls Nos. 222-251, 30 C-1-BT, full scantling, turbine propulsion cargo vessels, for U. S. Maritime Commission. Keel laying dates, No. 222, November 20; No. 223, November 25; No. 224, December 20; No. 225, December 29, 1941. **Launching dates, No. 222, March 30;** No. 223, April 17; No. 224, May 4; No. 225, May 22, 1942.

Hulls Nos. 206, U. S. S. Doyen; 207, U. S. S. Feland; two design P1-S2-L2 twin-screw turbine propulsion transports for the U. S. Maritime Commission. Keel laying dates, No. 206, September 18; No. 207, November 10, 1941. **Launching dates, No. 206, February 18;** No. 207, June 17, 1942. Delivery dates, No. 206, June 29; No. 207, October 26, 1942.

F. L. FULTON
Antioch, Calif.

New Construction:

Six 97′ wooden mine sweepers for U. S. Navy.

GEN. ENGINEERING & DRY DOCK CO.
Alameda, Calif.

New Construction:

Sixteen mine sweepers for U. S. Navy.

HARBOR BOAT BUILDING CO.
Terminal Island, Calif.

New Construction:

Hulls Nos. 117-120, four 136′ motor mine sweepers for U. S. Navy. Keels laid, No. 117, May 8, 1941; No. 118, May 12, 1941; No. 119, July 15, 1941; No. 120, August 23, 1941. **Launched,** No. 117, August 23; No. 118, October 27, 1941; **No. 119, February 23, 1942.**

Hulls Nos. 143-148, six motor torpedo boats, for U. S. Navy.

KAISER CO., INC.
Vancouver, Wash.

New Construction:

Sixty-five EC-2 type cargo vessels for U. S. Maritime Commission.

HUBBARD'S SOUTH COAST COMPANY
Newport Beach, California

New Construction:

Four 45′ twin-screw aircraft tenders for U. S. Navy. **Completed.**

Six 135′ mine sweepers for U. S. Navy.

KRUSE & BANKS SHIPBUILDING CO., INC.
North Bend, Oregon

New Construction:

Hulls Nos. 121-124, four 135′ wooden mine sweepers, YMS type, for U. S. Navy.

LAKE WASHINGTON SHIPYARDS
Houghton, Wash.

New Construction:

Four anti-submarine net tenders.

Four thousand A. S. N. T. floats.

Coast and Geodetic Survey ship.

Six seaplane tenders for U. S. Navy.

AL LARSON BOAT SHOP, INC.
Terminal Island, Calif.

New Construction:

Hulls Nos. 112-113, two mine sweepers, YMS 86 and YMS 87, for U. S. Navy. Keels laid, No. 112, June 20; No. 113, July 18, 1941. **Delivery dates, No. 112, February 10;** No. 113, April 10, 1942.

LOS ANGELES S. B. & D. D. CORP.
San Pedro, Calif.

New Construction:

Hulls Nos. AR6-AR8, three repair vessels for U. S. Navy.

Hulls Nos. AV 11-AV 13, three seaplane tenders for U. S. Navy.

MOORE DRY DOCK CO.
Oakland, Calif.

New Construction:

Hulls Nos. 201-203, three cargo and passenger vessels for U. S. Maritime Commission and Alcoa Steamship Co. 442′ x 62′ x 25′; depth molded to bridge deck 41′6″; passenger carrying capacity 38. Keel laying dates, March 26, June 3 and August 6, 1941. Launching dates, No. 201, October 21; No. 202, December 4; No. 203, December 30, 1941. Estimated delivery dates, June 1, July 1, and December 28, 1942.

Hulls Nos. 212-213, two submarine tenders, for U. S. Navy. Keels laid, No. 212, July 31; No. 213, September 15, 1941.

Hulls Nos. 207-211, five submarine rescue vessels for U. S. Navy. Keel laying dates, No. 207, September 15; Nos. 208-209, September 30; Nos. 210-211, October 15, 1941.

Hulls Nos. 214-219, six C-2 cargo vessels for U. S. Maritime Commission. Keel laying dates, No. 214, October 21; No. 215, December 4; No. 216, December 31, 1941.

Twelve C-2 cargo vessels.

OLSON & WINGE MARINE WORKS
Seattle, Wash.

New Construction:

Hulls Nos. 40-45, six 40′ motor sailers for U. S. Army. Keels laid, three, September 15, 1941.

Conversions:

Five for the U. S. Army. Total cost, $50,000.

Los Angeles
Shipbuilding and Drydock
Corporation

LOS ANGELES HARBOR . . . SAN PEDRO, CALIFORNIA

Shipbuilding and
Repair Facilities

Drydocking and
Machinery Repairs

Builders of
MERCHANT AND NAVAL VESSELS

☆☆

Cable Address:
"LASHIPCO"

OREGON SHIPBUILDING CORP.
Portland, Oregon

New Construction:

Hulls Nos. 172-200 and 229-240, forty-one EC-2 type cargo vessels, for U. S. Maritime Commission. Keel laying dates, No. 172 and No. 173, May 31; No. 174, July 11; No. 175, No. 176 and No. 177, July 18; No. 178, September 18; No. 179 and No. 180, September 20; No. 181, September 30; No. 182, October 21; No. 183, October 26; No. 184, November 11; No. 185, November 26; No. 186, December 9; No. 187, December 16; No. 188, December 22, 1941. Launching dates, No. 172, October 26; No. 173, November 16; No. 174, November 23; No. 175, December 7; No. 176, December 14; No. 177, December 21; No. 180, December 28, 1941.

Eighty-eight EC-2 type cargo vessels, for U. S. Maritime Commission.

PACIFIC BRIDGE CO.
San Francisco, Calif.

New Construction:

One seagoing drydock for U. S. Navy. Cost $1,649,000.

PACIFIC DRY DOCK & REPAIR CO.
Oakland, Calif.

New Construction:

One all-welded steel oil barge. 148′ x 38′ x 9′; 300,000 gal. capacity.

Lighters. Cost $284,572.

PERMANENTE SHIPBUILDING CORP.

Richmond, Calif.

New Construction:

Fifteen C-4 type cargo vessels for U. S. Maritime Commission.

RICHMOND SHIPBUILDING CORP.

Richmond, Calif.

New Construction:

Hulls Nos. 41-64, twenty-four EC-2 type cargo vessels for U. S. Maritime Commission. **Keel laying dates,** No. 41, No. 42 and No. 43, September 17; Nos. 44 and 45, October 6; No. 46, October 8, 1941.

SAN DIEGO MARINE CONST. CO.

San Diego, Calif.

New Construction:

Four large wooden mine sweepers for U. S. Navy.

One 87′ wooden tug boat.

One 64′ wooden passenger ferryboat.

Conversion:

One 185′ yacht, converted to patrol vessel.

One 310′ steam schooner, converted to salvage ship.

SEATTLE S. B. & D. D. CO.

Seattle, Wash.

New Construction:

Four 136′ mine sweepers for U. S. Navy.

SEATTLE-TACOMA SHIPBUILDING CORP.—PLANT No. 1

Tacoma, Wash.

New Construction:

Hulls No. 6, Frederick Funston; No. 7, James O'Hara, two C-3 shelter deck type cargo steamers for U. S. Maritime Commission. To be converted on completion to U. S. Army troopships. Keel laying dates, April 21 and June 16, 1941. Launching dates, September 27 and December 30, 1941.

Hulls Nos. 8-11, four C-3 cargo ships for U. S. Maritime Commission. 492′ x 69′6″ x 42′6″ (molded); steam turbine propulsion. Keel laying dates, No. 8, June 18; No. 9, October 1; No. 10, October 27, 1941; No. 11, January 2, 1942. **Launching dates,** No. 8, October 21, 1941; No. 9, January 15; **No. 10, February 21;** No. 11, May 1, 1942. Delivery dates, No. 8, April; No. 9, April; No. 10, May; No. 11, June, 1942.

Hulls Nos. 12, Patapsco; 13, Rappahannock; 14, Rio Grande; 15, Wabash; 16, Susquehanna; five TI-MT-MI tankers for U. S. Navy. 310′9″ x 48′6″ x 19′9′. Keel laying dates, No. 12, May 18; No. 13, May 18; No. 14, May 10; No. 15, July 20; No. 16, August 3, 1942. Launching dates, No. 12, May 8; No. 13, July 18; No. 14, August 1; No. 15, October 3; No. 16, October 18, 1942. Delivery dates, No. 12, September 2; No. 13, October 28; No. 14, November 1, 1942; No. 15, January 15; No. 16, February 1, 1943.

Hulls Nos. 17-46, thirty C-3 cargo vessels for U. S. Maritime Commission. 492′ x 69′6″ x 42′6″. Steam turbine propulsion. Keel laid, No. 17, November 3; No. 18, November 27, 1941. Delivery date, No. 17, May 18, 1942.

SEATTLE PLANT

New Construction:

Twenty-five destroyers for U. S. Navy.

THE SHAIN MANUFACTURING CO.

Seattle, Washington

New Construction:

One model 49 trimmer ship, express cruiser, for Superior Packing Co., Alaska.

One 50′ commodore model trimmer ship for E. Ramey.

Two 50′ trimmer ships for U. S. Coast Guard. 12½′ beam; twin Chrysler Royals.

One 50′ trimmer ship for Dr. Chas. Ward. 12½′ beam. Gray diesel.

STEPHENS BROS.

Stockton, Calif.

New Construction:

Three large wooden mine sweepers for U. S. Navy.

★ **Twelve 100′ (LWL) offshore aircraft rescue boats** for the U. S. Army.

★ **Twenty 38′ picket boats** for U. S. Coast Guard.

★ **One 40′ utility vessel** for U. S. Army Transport Service.

TODD-CALIFORNIA SHIPBUILDING CORP.

Richmond, Calif.

New Construction:

Twenty-five cargo vessels for British Purchasing Commission. 416′ long, 57′ beam.

One hundred twenty-five EC-2 type cargo vessels for U. S. Maritime Commission.

TODD-SEATTLE DRY DOCKS

Seattle, Wash.

Conversion work.

UNITED ENGINEERING CO., LTD.

San Francisco, Calif.

New Construction:

Hulls Nos. 17-20, four 205′ Navy fleet tugboats, for U. S. Navy.

Hulls Nos. 21-24, four 205′ Navy fleet tugboats, for U. S. Navy.

WESTERN BOAT BUILDING CO., INC.

Tacoma, Wash.

New Construction:

Hulls Nos. 147-148, two U. S. Minesweepers, Y.M.S. 133-Y.M.S. 134. Keel laying dates, No. 147, June 23, 1941; No. 148, August 12, 1941. **Launching dates,** No. 147, December 18, 1941; **No. 148, February 15, 1942.**

Hull No. 149, fishing boat for stock; 95′ x 26′.

Conversion:

Western Queen to YP, for U. S. Navy.

St. Francis to mine sweeper for U. S. Navy.

WESTERN PIPE AND STEEL CO.

South San Francisco, Calif.

New Construction:

Hulls Nos. 62-65, 77-95, twenty-three C-3 cargo ships for U. S. Maritime Commission, 492′ x 69′ x 42′6″. Steam propulsion. Keel laying dates, No. 62, April 17; No. 63, May 29; No. 64, July 17; No. 65, September 30, 1941. Launching dates, No. 62, September 27, 1941.

WILLAMETTE IRON & STEEL CORP.

Portland, Ore.

New Construction:

Two minelayers, CM6, U. S. S. Catskill, and CM7, U. S. S. Ozark, for U. S. Navy.

Conversion:

U. S. S. President Jackson for U. S. Navy.

Atlantic, Lakes, Rivers

ALABAMA DRY DOCK & SHIPBUILDING CO.

Mobile, Ala.

New Construction:

Hulls Nos. 228-229, two tugs for Mobile Towing & Wrecking Co.

Hull No. 230, tug, for stock.

Hulls Nos. 231-243, thirteen all-welded Emergency cargo vessels for U. S. Maritime Commission. Cost $19,500,000.

Hull No. 244, 18,000-ton floating dock, for Todd Shipyards Corp., Galveston.

Twenty-eight EC-2 type cargo vessels for U. S. Maritime Commission.

LESTER F. ALEXANDER CO.

New Orleans, La.

New Construction:

Three A-400 type steel barges for stock. 32′ x 120′ x 8′.

One steel tug for stock. 120-hp.

One steel tug, South Wind, for U. S. Navy Department.

★ **One 55′ steel tug** for Quartermaster Corps, Washington, D. C. 120-hp diesel.

★ **Two 68′ steel tugs** for Quartermaster Corps, Washington, D. C. 220-hp diesel.

★ **One 96′ steel tug** for Quartermaster Corps, Washington, D. C. 600-hp diesel.

★ **One steel tug** for Canadian Navy. 400-hp diesel.

★ **Four steel barges** for Quartermaster Corps, Washington, D. C. 110′ x 30′ x 7′6″.

AMERICAN BRIDGE COMPANY

Pittsburgh, Pa.

New Construction:

Eight dump scows. 160′ x 50′6″ x 13′6″; for Panama Canal.

Ten coal barges for stock. 175′ x 26′ x 11′.

Sixteen sand barges for the Panama Canal. 160′ x 50′6″ x 13′6″.

Sixty coal barges for Carnegie-Illinois Steel Corp. 175′x26′x11′.

Fifteen barges for Pennsylvania Railroad Co. 80′ x 30′ x 9′3″.

Ten barges for Pennsylvania Railroad Co. 80′ x 30′ x 9′.

AMERICAN CAR & FOUNDRY CO.

Wilmington, Delaware

New Construction:

Four 135′ mine sweepers for Navy Dept., Bureau of Supplies and Accounts.

THE AMERICAN SHIP BUILDING CO.

Cleveland, Ohio

New Construction:

Eight mine sweepers (4 at Lorain, Ohio; 4 at Cleveland, Ohio) for U. S. Navy; 220′ O.A. x 32′ x 17′. Diesel-electric propulsion.

Fifteen 2500-ihp, three cylinder triple expansion engines for Maritime Commission design EC2-S-C1 cargo vessels.

Two bulk freighters for Pittsburgh Steamship Co. 614′ x 67′ x 35′; turbo-electric propulsion.

Six bulk freighters for U. S. Maritime Commission. 620′-590′ x 60′ x 35′.

BATH IRON WORKS

Bath, Maine

New Construction:

Hulls Nos. 190-195, DD449-451, 467-469, six destroyers for U. S. Navy.

Hulls Nos. 196-206, DD507-DD517, eleven destroyers for U. S. Navy.

Hulls Nos. 208-213; DD629-DD631; DD 642-DD644; six destroyers for U. S. Navy.

BETHLEHEM STEEL COMPANY

Shipbuilding Division—Fairfield Yard

Baltimore, Md.

New Construction:

Hulls Nos. 2002-2062, sixty-one EC-2 type cargo vessels, for U. S. Maritime Commission. Keel laying dates, No. 2002, May 15; No. 2003, June 21; No. 2004, June 21; No. 2005, July 15; No. 2006, July 15; No. 2007, August 15; No. 2008, August 25; No. 2009, September 3; No. 2010, September 12; No. 2011, September 22; No. 2012, September 27; No. 2013, October 13; No. 2014, October 20; No. 2015, October 29; No. 2051, November 5; No. 2016, November 19; Nos. 2017-2018, December 10; Nos. 2052-2053, December 13, 1941; Nos. 2019-2020, January 6; Nos. 2021-2022, January 28, 1942. Launching dates, No. 2002, October 25; No. 2003, November 15; Nos. 2004-2005, December 6; Nos. 2006-2007, December 30,

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- Cylinder Liners
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- Followers
- Valve Bushings
- Sectional Valve Rings
- Light Weight H. P. Valve

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- Cylinder Liners
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- Valve Seats
- Valve Bodies

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Modern marine engine performance demands careful selection of the proper material for the vital cylinder parts.

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South Boston, Mass.

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16 California Street
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San Francisco

HUNT - SPILLER *Air Furnace* GUN IRON

1941; Nos. 2009-2012, January 24, 1942. **Delivery dates,** No. 2002, January 19; No. 2003, January 29; **No. 2004, February 9; No. 2007, February 12, 1942.**

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Division—Fore River Yard
Quincy, Mass.

New Construction:

Hull No. 1478, Massachusetts, battleship, for U. S. Navy. Keel laid July 20, 1939. Launched September 23, 1941.

Hull No. 1480, San Juan, cruiser, for U. S. Navy. Keel laid May 15, 1940. Launching date, September 6, 1941.

Hull No. 1484, cargo vessel for U. S. Maritime Commission. 450′ x 66′ x 42′3″; geared turbines and water tube boilers. Launching date, November 16, 1940.

Hulls Nos. 1492-1493, two tankers for Sinclair Refining Co. Keel laying date, No. 1492, August 9; No. 1493, December 6, 1941. Launching date, No. 1492, December 6, 1941.

Hulls Nos. 1494-1497, four heavy cruisers for U. S. Navy. Keel laying dates, No. 1494, May 26; No. 1495, June 30; No. 1496, September 3; No. 1497, October 9, 1941.

Hulls Nos. 1498-1501, four light cruisers for U. S. Navy. Keel laid, No. 1498, September 23, 1941.

Hulls Nos. 1502-1503, two light cruisers for U. S. Navy.

Hulls Nos. 1504-1507, four heavy cruisers for U. S. Navy.

Hulls Nos. 1508-1511, four aircraft carriers for U. S. Navy. Keel laying date, No. 1508, July 15; No. 1509, September 15, 1941.

Hulls Nos. 1516-1519, four destroyers, for U. S. Navy. Keel laying date, No. 1516, May 1; No. 1517, May 20, 1941.

Hulls Nos. 1520-1521, destroyers, for U. S. Navy. (Transferred from Bethlehem San Pedro yard.)

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Div.—Sparrows Point Yard
Sparrows Point, Md.

New Construction:

Hull No. 4348, C-1 cargo vessel. LOA 416′, LBP 395′, beam 60′, depth 37′6″. Keel laid March 13, 1941.

Hulls Nos. 4351-4352, two cargo vessels for Seas Shipping Co. 450′ x 66′ x 34′. Keel laying dates, No. 4351, December 12, 1940; No. 4352, January 22, 1941. Launching dates, No. 4351, July 26; No. 4352, August 29, 1941.

Hulls Nos. 4354-4356, three oil tankers for Socony Vacuum Oil Co. 487′6″ x 68′ x 37′. Keel laying dates, No. 4354, September 16, 1940; No. 4355, April 23; No. 4356, July 8, 1941. Launching date, No. 4354, July 1, 1941.

Hulls Nos. 4358-4359, two oil tankers for Socony Vacuum Oil Co. 487′6″ x 68′ x 37′. Keel laid, No. 4358, August 1, 1941.

Hulls Nos. 4360-4361, two oil tankers for Union Oil Co. 442′ x 64′ x 34′10″. Keel laying date, No. 4360, June 18, 1941.

Hulls Nos. 4362-4364, three cargo and passenger vessels for Mississippi Shipping Co. 465′ x 65′6″ x 39′9″. Keel laid, No. 4362, September 4, 1941.

Hull No. 4365, oil tanker for Richfield Oil Co. 442′ x 64′ x 34′10″. Keel laid May 21, 1941.

Hulls Nos. 4367-4368, two oil tankers for Panama Transport Co. 487′6″ x 68′ x 37′.

Hull No. 4369, oil tanker for Continental Oil Co. 442′ x 64′ x 34′10″.

Hulls Nos. 4371-4372, two oil tankers for Gulf Oil Co. 442′ x 64′ x 34′10″.

Hull No. 4373, tanker for Panama Transport Co. 487′6″ x 68′ x 37′.

Hulls Nos. 4374-4375, two tankers for Union Oil Co. of Calif. 487′6″ x 68′ x 37′.

Hulls Nos. 4376-4377, two tankers for Socony Vacuum Oil Co. 487′6″ x 68′ x 37′.

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Div.—Staten Island Yard
Staten Island, N. Y.

New Construction:

Hulls Nos. 8021-8022, two destroyers for U. S. Navy.

Hulls Nos. 8023-8029; 8033-8035; ten destroyers for U. S. Navy.

BURGER BOAT CO.
Manitowoc, Wisconsin

New Construction:

One ferryboat. 110′ x 32′ x 8′. Gray diesel engine.

Six 135′ wooden motor mine sweepers for U. S. Navy.

Two 110′ subchasers.

IRA S. BUSHEY & SONS, INC.
Brooklyn, N. Y.

New Construction:

Hull No. 498, 156-foot oil tanker. Delivery date, April, 1942.

Hull No. 499, 156-foot oil tanker. Delivery date, September, 1942.

Hulls Nos. 503-504, two 100′ steel tugs, for U. S. Maritime Commission. 805-hp.

Hulls Nos. 505-506, two drydocks, for U. S. Navy.

Hulls Nos. 507-509, three 100′ steel tugs, for U. S. Navy.

Hulls Nos. 511-513, three 100′ steel tugs, for Maritime Commission.

Hull No. 514, deck scow (wood), for A. J. Harper, Baltimore, Md. 117′ x 36′ x 10′.

Hull No. 515, 107′ steel tug.

Hull Nos. 515-516, two 100′ steel tugs.

Hull No. 517, 12,000-ton, sectional drydock for U. S. Navy.

CALUMET SHIPYARD & DRY DOCK CO.

Chicago, Illinois

New Construction:

Hulls Nos. 131-132, two oil barges, standard river type, for Ashland Oil & Refining Co. 195′ x 35′ x 10′. **Delivered.**

Hulls Nos. 133-135, 142-143, two three-barge units for Ashland Oil & Refining Co. Each unit, 195′ x 35′ x 10′; center section square on both ends; both end sections square on one end, raked on opposite end.

Hull No. 136, one river towboat for Ashland Oil & Refining Co. 145′ x 32′ x 9′.

Hulls Nos. 137-141, five tugs for U. S. Maritime Commission.

CHARLESTON S. B. & D. D. CO.

Charleston, South Carolina

New Construction:

Eight 205′ mine sweeping fleet tugs. Delivery for all by September, 1943.

CONSOLIDATED SHIPBUILDING CORP.

Morris Heights, N. Y.

New Construction:

Eleven 173′ steel submarine chasers for U. S. Navy.

CONSOLIDATED STEEL CORP. OF TEXAS

Orange, Texas

New Construction:

★ **One all-welded steel marine drilling unit** for Phillips Petroleum Co.

CRAMP SHIPBUILDING COMPANY

Philadelphia, Pa.

New Construction:

Six cruisers, Cleveland class, for U. S. Navy.

Submarines, four floating workshops and seagoing tugs, for U. S. Navy.

DEFOE BOAT & MOTOR WORKS

Bay City, Mich.

New Construction:

Hulls Nos. 171-174, four mine sweepers for U. S. Navy, 220′ long.

Hulls Nos. 181-186, six 174′ escort vessels, for U. S. Navy.

Hulls Nos. 187-194, eight 174′ sub-chasers for U. S. Navy.

Hulls Nos. 195-198, four 145′ tugs for U. S. Navy.

Hulls Nos. 199-204, five subchasers for U. S. Navy.

DELTA SHIPBUILDING CORP.

New Orleans, Louisiana

New Construction:

Twenty-five EC-2 Emergency type vessels for U. S. Maritime Commission. 416′ x 56′10¾″ x 37′4″; triple expansion engine.

Twenty-eight EC-2 Emergency type vessels, for U. S. Maritime Commission.

THE DRAVO CORPORATION

Engineering Works Division

Pittsburgh, Pa., and Wilmington, Del.

New Construction:

Hull No. 1839, 165′ type PC submarine chaser, for U. S. Navy, Washington, D. C.

Hull No. 1877, floating caisson gate, for U. S. Navy, Philadelphia Navy Yard.

Hull No. 1903, floating caisson gate for U. S. Navy, Norfolk Navy Yard.

Hulls Nos. 1907-1911, five 165′ type AM mine sweepers for Bureau Supplies & Accounts, U. S. Navy Dept., Washington, D. C.

Hulls Nos. 1912-1916, five 165′ type PC submarine chasers for Bureau of Supplies & Accounts, U. S. Navy Dept., Washington, D. C.

Hulls Nos. 1930-1933, four welded steel deck barges for Delaware, Lackawanna & Western R. R., New York City. 100′ x 30′ x 9′6″.

Hull No. 1955, W-7 welded steel coal barge, for Hillman Coal & Coke Co., New Orleans, La. 195′ x 35′ x 9′9″.

Hull No. 1956, 25-ton floating crane for Charleston, S. C. Navy Dept., Washington, D. C.

Hulls Nos. 1971-1972, two welded oil barges; No. 1971, for California Transportation Co.; No. 1972, for Canal Barge Co., New Orleans, La. 195′ x 35′ x 9′9″.

Hulls Nos. 1973-1976, four welded sand and gravel barges for Keystone Sand Div. 135′ x 27′ x 8′.

Hulls Nos. 1977-1986, ten type W-7 welded bulk cargo barges for Pittsburgh Coke & Iron. 175′ x 26′ x 11′.

Hulls Nos. 1987-1992, six welded oil barges; No. 1987, for Canal Barge Co., New Orleans, La.; Nos. 1988-1992, for Cornelius Kroll, Houston, Texas. 195′ x 35′ x 9′9″.

Hulls Nos. 1998-2009, twelve covered lighters for Bureau of Supplies and Accounts, Navy Dept.

Hulls Nos. 2010-2011, two welded side-dump scows for Bureau S. & A., Navy Dept., Washington, D. C. 115′ x 28′ x 7′6″.

Hulls Nos. 2012-2021, ten welded steel car floats, for Pennsylvania R. R., Philadelphia, Pa. 250′ x 34′ x 9′1″.

Hulls Nos. 2022-2030, nine welded deck barges, for Erie R. R. 100′ x 30′ x 9′6″.

Hull No. 2031, welded steel car float for Erie R. R. 250′ x 34′ x 9′1″.

Hull No. 2042, caisson, for drydock for Bayonne Associates, Bayonne, N. J.

Hulls Nos. 2045-2058, fourteen welded steel coal barges for Wheeling Steel Corporation. 10′ x 26′ x 10′8″.

Hull No. 2059, welded cargo box barge, for Lone Star Cement Co., New York City. 180′ x 40′ x 9′6″.

Hull No. 2060, caisson, for drydock No. 2 at Charleston Navy Yard.

Hull No. 2061, caisson, for drydock No. 1 at Charleston Navy Yard.

Hulls Nos. 2062-2065, four 165′ submarine chasers, for Bureau of Ships, Navy Department, Washington, D. C.

Hulls Nos. 2066-2073, one floating steel drydock (consisting of 8 segmental pontoons), for Maryland Dry Dock Co.

Hulls Nos. 2074-2077, four welded steel oil barges for Canal Barge Co., New Orleans, La. 195′ x 35′ x 9′6″.

ELECTRIC BOAT COMPANY

Groton, Conn.

New Construction:

Two submarines, SS206, Grampus; SS208, Grayback; for U. S. Navy. Keels laid, Grampus, February 4, 1940; Grayback, April 3, 1940.

One submarine, SS204, Mackeral, for U.S. Navy. Keel laid October 6, 1939. Launched September 28, 1940.

Three submarines, SS212, Gato; SS213, Greenling; SS214, Grouper; for U. S. Navy. Keels laid, Gato, October 5, 1940; Greenling, November 12, 1940.

Thirteen submarines, SS215, Growler; SS216, Grunion; SS217, Guardfish; SS218, Albacore; SS219, Amberjack; SS220, Barb; SS221, Blackfish; SS222, Bluefish; SS223, Bonefish; SS224, Cod; SS225, Cero; SS226, Corvina; SS227, Darter.

Twenty-five submarines, SS240-SS264.

THE FEDERAL SHIPBUILDING AND DRY DOCK COMPANY

Kearny, N. J.

New Construction:

Hulls Nos. 168-169, CL51, Atlanta; and CL52, Juneau; two cruisers, for U. S. Navy. Keels laid April 22 and May 27, 1940. Launching date, No. 168, September 6; No. 169, October 25, 1941.

Hulls Nos. 181-186, six C-2 cargo ships for U. S. Maritime Commission. Keel laid, No. 181, June 5; No. 182, October 2; No. 183, October 25; No. 184, November 17; No. 185, December 9, 1941. Launching date, No. 181, November 12, 1941.

Hulls Nos. 192-193, two tankers for Sinclair Refining Co. Keel laid, No. 193, July 21, 1941. Launching date, No. 192, December 6, 1941.

Hulls Nos. 196-197, two destroyers for U. S. Navy. Keels laid, Nos. 196-197, December 16, 1940. Launching date, No. 196, September 26, 1941.

Hulls Nos. 198-203, six destroyers for U. S. Navy. Keels laid, Nos. 198-199, October 2; Nos. 200-201, November 27, 1941.

Hulls Nos. 204-205, two destroyers for U. S. Navy.

Hulls Nos. 206-213, eight destroyers for U. S. Navy. Keels laid, No. 206 and 207, February 11; No. 208 and 209, July 31; Nos. 210-211, September 15; Nos. 212-213, November 3, 1941.

Hulls Nos. 214-218, five destroyers for U. S. Navy.

Hulls Nos. 219-221, three cruisers for U. S. Navy.

Hulls Nos. 222-227, six destroyers for U. S. Navy.

Hulls Nos. 229-232, four destroyers for U. S. Navy.

Hulls Nos. 233-240, eight C-2 cargo ships for the U. S. Maritime Commission.

Hulls Nos. 241-264, twenty-four C-2 cargo vessels for U. S. Maritime Commission.

GREAT LAKES ENGINEERING WORKS

River Rouge, Michigan

New Construction:

Hulls Nos. 287-289, three bulk freighters for Pittsburgh S. S. Co. 640′ x 67′ x 35′; steam turbine engines. Keel laying dates, No. 287, June 16; No. 288, July 1; No. 289, August 6, 1941.

Ten bulk carriers for U. S. Maritime Commission. 595′ x 60′ x 35′.

HENRY C. GREBE & CO., INC.

Chicago, Illinois

New Construction:

Two 135′ mine sweepers for U. S. Navy.

Five 65′ steel harbor tugs.

GREENPORT BASIN & CONST. CO.

Greenport, L. I., N. Y.

New Construction:

Twelve 135′ motor mine sweepers YMS 20-31, for U. S. Navy.

★ **Thirty-seven 50′ steel tank lighters** for U. S. Navy.

GULFPORT BOILER & WELDING WORKS, INC.

Port Arthur, Texas

New Construction:

Hulls Nos. 193-194, two diesel-electric tugs, for General Motors Corp., Cleveland Diesel Engine Division. 100′ x 24′ x 12′4″. **Delivery dates, No. 193, February 28; No. 194, March 28, 1942.**

Hulls Nos. 203-204, two 143-foot rescue vessels, for General Motors Corp. Diesel-electric drive.

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We have ample stocks reserved NOW for all Government boats.
We are prepared to supply your requirements on time.
We have seventy years of experience behind us.

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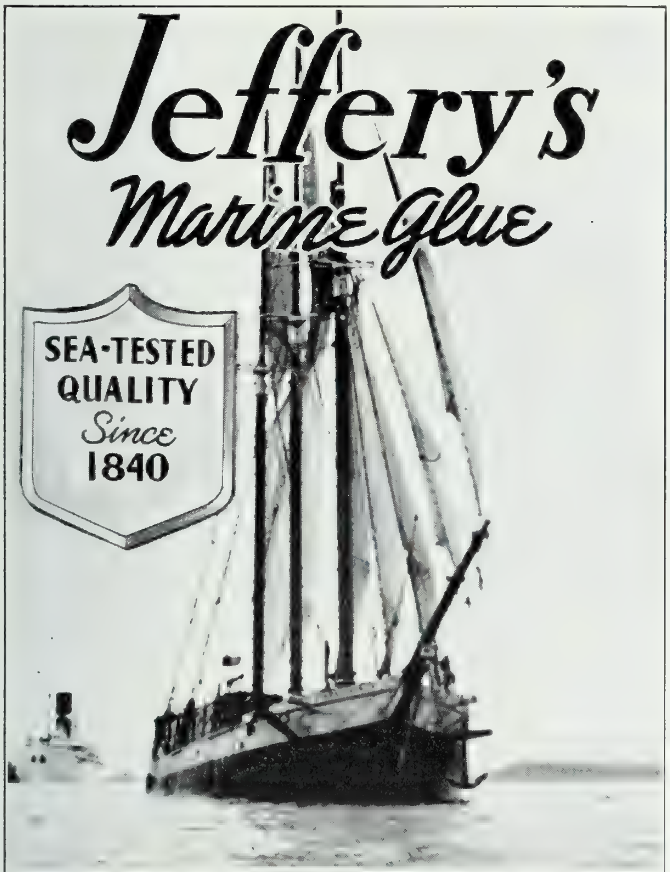

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Less Vibration, Longer Valve Life with Edward Checks

Designed for freedom from shock, clatter and excessive vibration, Edward forged and cast steel lift check valves do their jobs quietly and efficiently. Accurately guided for sure seating. Horizontal, angle and vertical. Screwed and flanged ends in sizes ¼ in. to 2 in., flanged and welding ends in 2½ in. to 12 in. sizes. For heavy fluids Edward ball type check is often preferable. Details in Edward Marine Catalog No. 201.

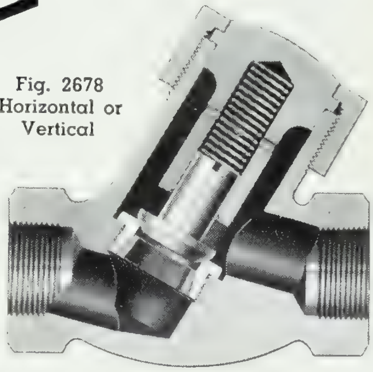

Fig. 2678 Horizontal or Vertical

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East Chicago
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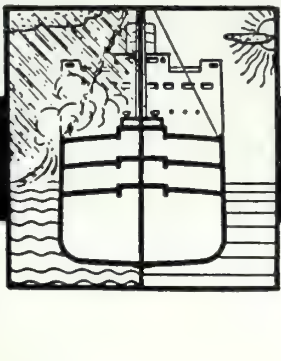

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Prevents Sweat Damage
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HEAD OFFICE - 525 CENTRAL BUILDING, SEATTLE, WASH.
NEW YORK OFFICE - 75 WEST ST., NEW YORK, N. Y.

★ **Hulls Nos. 207-208, two 143′ rescue vessels,** for General Motors Corp. Diesel-electric drive.

GULF SHIPBUILDING CORP.

Chickasaw, Ala.

New Construction:

Four 2100-ton destroyers for U. S. Navy.

Two cargo vessels for Waterman Steamship Corporation. 445′ x 63′ x 40′6″; shelter deck type; geared turbine drive.

Six 220′ mine sweepers, for U. S. Navy.

Fourteen C-2-S-E1 cargo vessels for U. S. Maritime Commission. 445′ x 63′ x 40′6″; shelter deck type; geared turbine drive.

★ **Three destroyers** for U. S. Navy.

★ **Three 220′ mine sweepers** for U. S. Navy.

HOUSTON SHIPBUILDING CORP.

Houston, Texas

New Construction:

Hulls Nos. 1-37, thirty-seven EC-2 cargo vessels, for U. S. Maritime Commission. Keel laying dates, Nos. 1-2, August 18; Nos. 3-4, July 25; Nos. 5-6, October 23, 1941.

Thirty-two EC-2 type cargo vessels for U. S. Maritime Commission.

THE INGALLS SHIPBUILDING CORP.

Pascagoula, Miss., and Decatur, Ala.

Pascagoula

New Construction:

Hulls Nos. 268, 297-299, four C-3-IN passenger-cargo vessels for U. S. Lines. Completion dates, May, November, December, 1942; and February, 1943.

Hull No. 267, C-3-P passenger-cargo vessel, for American-South African Line, Inc. **Completed February, 1942.**

Hulls Nos. 293-296, four C-3-S-A-2 cargo vessels for U. S. Maritime Commission. **Completion dates, February, March,** May and June, 1942.

Hulls Nos. 325-336, twelve C3-S-A2 cargo vessels for the U. S. Maritime Commission. 492′ x 69′6″ x 42′6″. Keel layings, from April 30 to December 31, 1943

Hulls Nos. AN 1-4, four net layers for U. S. Navy.

Decatur

New Construction:

Hulls Nos. 345-348, four 1300-bbl. oil barges, for Quartermaster Corps, U. S. Army. 230′x40′x9′6″. Delivery date, April 20, 1942.

Hull No. 349, derrick barge, for U. S. Engineer Department, Galveston, Texas. 80′ x 40′ x 6′6″. **Delivery date, March, 1942.**

Hulls Nos. 351-358, eight cargo barges, for Quartermaster Corps, U. S. Army. 210′ x 40′ x 15′.

GEORGE LAWLEY & SON CORP.

Neponset, Mass.

New Construction:

Twelve 45′ tank lighters for U. S. Navy.

Two 127′ fish trawlers for Booth Fisheries Co. Diesel powered.

Five boats for repair work for U. S. Navy.

Ten 165′ submarine chasers for U. S. Navy.

Conversion:

90′ launch Cutty Sark to U. S. Army launch Captain Dean C. Howard.

LEVINGSTON SHIPBUILDING CO.

Orange, Texas

New Construction:

Hull No. 203, coastwise tug for stock. 85′ x 24′ x 9′11″.

Hulls Nos. 211-212, two tugs. 105′ x 25′ x 9′6″. General Motors diesel.

Hull No. 213, tug, for stock. 85′ x 23′ x 9′6″. Superior diesel.

Hulls Nos. 214 and 216, tugs, for River Terminals Corp. 74′ x 20′ x 9′. Atlas diesel.

Hulls Nos. 217-220, four 143′ ocean tugs for General Motors Sales Corp.

Hulls Nos. 221-225, five barges, for G. B. Ziegler. 205′ x 40′ x 19′10″.

Hulls Nos. 227-228, two barges, for Crown Central Petroleum Corp. 173′ x 39′ x 8′6″.

Hull No. 229, barge, for Crown Central Petroleum Corp. 74′ x 20′ x 9′.

Hulls Nos. 230-235, six barges, for U. S. Army. 74′ x 20′ x 9′.

Hulls Nos. 236-237, two barges, for Underwater, Inc. 173′ x 8′6″ x 39′.

Hulls Nos. 238-239, two barges, for U. S. Navy. 173′ x 8′6″ x 39′.

★ **Hulls Nos. 240-247, eight barges,** for U. S. Army.

THE LUDERS MARINE CONSTRUCTION CO.

Stamford, Connecticut

New Construction:

Two submarine chasers, PC505-PC506, for U. S. Navy.

Nine small subchasers for U. S. Navy.

Seven 165′ steel subchasers for U. S. Navy. Keel laid, first vessel, July, 1941.

Four wooden subchasers for U. S. Navy.

MANITOWOC SHIPBUILDING CORP.

Manitowoc, Wisconsin

New Construction:

Ten submarines, SS265-274, for U. S. Navy.

MARIETTA MANUFACTURING CO.

Point Pleasant, W. Va.

New Construction:

Hulls Nos. 474-489, sixteen all-steam propelled mine planters, for the U. S. Army. **Keel laying dates,** No. 474, May 14; No. 475, May 20; No. 476, June 24; No. 477, July 11; No. 478, November 5; No. 479, December 3, 1941; No. 480, January 2; **No. 481, February 4, 1942. Launching dates,** No. 474, November 4; No. 475, December 2, 1941; No. 476, January 1; **No. 477, February 3, 1942.**

MARINE IRON & SHIPBUILDING CO.

Duluth, Minnesota

New Construction:

Hulls Nos. 70-72, three 180′ cutters of "Cactus" type for U. S. Coast Guard.

★ **Hulls Nos. 73-75, three 180′ cutters of Cactus type,** for U. S. Coast Guard.

JOHN H. MATHIS CO.

Camden, N. J.

New Construction:

Four anti-submarine net tenders for U. S. Navy.

Three 220′ mine sweepers for U. S. Navy.

MIAMI SHIPBUILDING CORP.

Miami, Florida

New Construction:

Forty-eight high-speed, off-shore patrol boats.

NEWPORT NEWS SHIPBUILDING & DRYDOCK CO.

Newport News, Va.

New Construction:

Hull No. 378, battleship 58, Indiana, for U. S. Navy. Keel laid November 20, 1939.

Hulls Nos. 390-391 (CL62-CL63), two light cruisers for U. S. Navy.

Hulls Nos. 392-394 (CV9-CV11), three aircraft carriers for U. S. Navy.

Hulls Nos. 395-398 (CV12-CV15), four aircraft carriers for U. S. Navy.

Hulls Nos. 399-400 (CL80-CL81), two light cruisers for U. S. Navy.

THE NEW YORK SHIPBUILDING CORPORATION

Camden, N. J.

New Construction:

BB57, South Dakota, battleship for U. S. Navy. Keel laid July 5, 1939.

AR5, Vulcan, repair ship for U. S. Navy. Keel laid December 26, 1939.

CL55, Cleveland; and CL56, Columbia; two cruisers for U. S. Navy. Order placed March 23, 1940.

CL57 and CL58, two cruisers for U. S. Navy. Order placed June 12, 1940.

AV7, Currituck, seaplane tender for U. S. Navy.

CL59-CL61, three cruisers for U. S. Navy.

CB1-CB6, six cruisers for U. S. Navy.

CL76, four cruisers for U. S. Navy.

NORTH CAROLINA SHIPBUILDING CO.

Wilmington, N. C.

New Construction:

Hulls Nos. 1-37, thirty-seven all-welded steel EC-2 cargo vessels for U. S. Maritime Commission. Keel laying dates, No. 1, May 22; No. 2, May 22; No. 3, May 28; No. 4, August 22; No. 5, September 3; No. 6, September 4; No. 7, October 12; No. 8, October 21, 1941.

THE PUSEY & JONES CORP.

Wilmington, Del.

New Construction:

Hulls Nos. 1082, Hains; and 1083, Hoffman; two seagoing hopper dredges for War Dept., U. S. Engineers Office, Philadelphia, Pa. 215′10½″ x 40′ x 15′6″. Diesel-electric propulsion. **Delivery dates, February** and August, 1942.

Hulls Nos. 1084-1093, ten C-1A type cargo ships for U. S. Maritime Commission. 412′3″ x 60′ x 37′6″. Steam turbine propulsion.

R. T. C. SHIPBUILDING CORP.

Camden, N. J.

New Construction:

Hulls No. 137, motor tanker. 190′ x 36′ x 12′.

Hulls Nos. 138-139, two motor tankers. 190′ x 36′ x 12′.

Hulls Nos. 140-142, three tankers for U. S. Navy.

★ **Hulls Nos. 143-144, two tankers,** for U. S. Navy.

SOUTH PORTLAND SHIPBUILDING CORP.

Portland, Maine

New Construction:

Hulls Nos. 201-216, sixteen EC-2 type cargo vessels, for U. S. Maritime Commission.

Thirty-three EC-2 type cargo vessels for U. S. Maritime Commission.

SUN SHIPBUILDING AND DRY DOCK COMPANY

Chester, Pa.

New Construction:

Hulls Nos. 202-206, five C-2 cargo vessels for U. S. Maritime Commission. 474′ x 63′x40′6″. Diesel propelled. Launching dates, No. 202, August 23; No. 203, September 20; No. 204, October 18; No. 205, December 20; No. 206, December 30, 1941.

Hulls Nos. 213-216; 219-220, six tankers for Panama Transport Co. 547′3″ x 70′ x 40′. Launching and delivery dates, 1942-1943.

Hulls Nos. 221-222, two tankers for Keystone Tankship Corp. 520′ x 68′ x 37′. Turbine. Keel laying dates, No. 221, June 12; No. 222, September 11, 1941. Launching dates, No. 221, October 4, 1941; No. 222, January 17, 1942.

Hulls Nos. 223-225, three tankers for The Texas Co. 513′10″ x 68′ x 36′. Turbine. Keels laid, No. 223, August 6; No. 224, October 2; No. 225, October 23, 1941. Launching date, No. 223, January 3, 1942. Delivery dates, 1942.

Hull No. 226, tanker for Kaymar Tankship Corp. 520′ x 68′ x 37′. Turbine. Keel laying date, December 24, 1941.

Hulls Nos. 227-228, two tankers for Seamar Tankship Corp. 520′ x 68′ x 37′. Turbine. Keel laying dates, 1942.

Hull No. 230, tanker for Atlantic Refining Co. 474′ x 65′ x 37′. Turbo-electric. Launching date, September 19, 1941. Delivery date, November, 1942.

Hulls Nos. 231-232, two tankers for Keystone Tankship Corp. 520′ x 68′ x 37′. Turbine. Delivery date, 1942.

Hulls Nos. 233 and 240, two tankers for Gulf Oil Corp. 485′ x 68′ x 36′; turbine propelled. Delivery dates, August, 1942, and December, 1942.

Hull No. 234, tanker for Sun Oil Co. 547′3″ x 70′ x 40′. Diesel propelled. Delivery date, April, 1942.

Hulls Nos. 235 and 237, two tankers for Standard Oil Co. of N. J. 547′3″ x 70′ x 40′; turbine. Delivery dates, No. 235, July; No. 237, August, 1942.

Hull No. 236, tanker for Atlantic Refining Co. 543′10″ x 70′ x 40′. Turbo-electric. Launched, November 15, 1941. Delivery date, December, 1942.

Hulls Nos. 238-239, two tankers for Standard Oil Co. of Calif. 521′ x 70′ x 40′; turbine propelled. Delivery dates, November and December, 1942.

Hulls Nos. 241-312, seventy-two tankers, for U. S. Maritime Commission.

Hulls Nos. 313-322, ten tankers, for U. S. Maritime Commission.

Hulls Nos. 323, 328, two tankers, for Sun Oil Co. 547′3″ x 70′ x 40′; diesel propelled.

Hulls Nos. 324-326, three 16-knot tankers, for The Texas Co. 513′10″ x 68′ x 36′.

Hulls Nos. 330-339, ten tankers, for U. S. Maritime Commission.

TAMPA SHIPBUILDING CO.
Tampa, Fla.

New Construction:

Hulls Nos. 37-40, four C-2 type cargo vessels, for U. S. Navy. 459′ x 63′ x 31′6″.

Three destroyer tenders, Piedmont, Sierra and Yosemite.

Sixteen mine sweepers for U. S. Navy.

TODD-BATH SHIPBUILDING CORP.
Bath, Maine

New Construction:

Hulls Nos. 1-30, thirty cargo vessels for British Purchasing Commission. Keel laying dates, No. 1, May 24; No. 2, June 4; No. 3, June 18; No. 4, June 18; No. 5, August 2; No. 6, July 16; No. 7, July 25; Nos. 8 and 9, December 21, 1941. **Launching dates,** Nos. 1-2, December 20, 1941; **Nos. 3-4, February 15; Nos. 5, 6 and 7, March 1;** Nos. 8 and 9, April 1, 1942.

Twenty-seven EC-2 type cargo vessels for U. S. Maritime Commission.

F. B. WALKER & SONS
Pascagoula, Mississippi

New Construction:

Two steel tugs, 75′ x 19′ x 8′6″.

Two steel oil barges. 132′ x 32′ x 8′.

One tug. 600 hp; 83′ x 19′ x 8′4″.

★ **Four barges.** 180′ x 36′ x 9′.

WHEELER SHIPBUILDING CORP.
Whitestone, N. Y.

New Construction:

Sixteen large wooden mine sweepers for U. S. Navy.

WHEELER SHIPYARDS, INC.
Brooklyn, N. Y.

New Construction:

Ten bomb target boats for U. S. Navy.

Forty 83′ cutters for U. S. Coast Guard

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Keep Posted!

Recent Development in Ship, Yard and Dock Equipment

C. D. Steel Helmet

A steel helmet for use in Civilian Defense has just been announced by the B. F. McDonald Co. of Los Angeles, San Francisco and Houston, well-known manufacturer of industrial safety equipment. The new hat is an adaptation in steel of the famous McDonald Model "T" Safety Hat used in industry.

Called the McDonald Airaid helmet, and styled after the "tin hat," made famous by the American doughboy, the new product uses the same fully-suspended shock absorbing headband that made the lighter "T" hat such a favorite with workmen. Like the "T" hat, the Airaid helmet comes in all sizes from 6⅝ to 7¾, with headbands instantly interchangeable to assure a comfortable fit. Spacing between the metal shell of the hat and headband provides adequate ventilation. All helmets are furnished complete with headband, leather sweatband and chin strap.

The military appearance of this helmet is further enhanced by its olive drab finish. Said to afford exceptional protection against falling fragments, the helmet also cushions the wearer's head against heavy shocks and blows from falling timbers, masonry, etc. The complete helmet, though considerably heavier than the McDonald "T" hat, still weighs only a shade over 28 ounces.

C. D. Steel Helmet

Blast Furnace Relining Record

What is believed to be a world record for speed in relining a blast furnace was made recently by Columbia Steel Company, subsidiary of United States Steel Corporation. The record, thirty-one days for the complete job, was established at the Ironton blast furnace, operating near Provo, Utah, and knocks some twenty days off records previously established by Eastern plants.

This record is even more unusual because the job was tackled from a standing start, in midwinter, and in a locality remote from large steel operations. The Ironton furnace is the only blast furnace operating west of the Rocky Mountains.

On January 16, because of a "break-out" through the hearth jacket, it was necessary to blow out the furnace to reline. With the urgent need for all-out defense production, C. T. Keigley, general superintendent, realized that the furnace should be relined in minimum time due to the necessity of replacing part of the hearth jacket before bricklaying could be started. On January 19, the furnace crew pitched in to remove the old brick lining. On January 29, the new lining was started, and on completion of brick work in the hearth, heat was immediately applied to dry out the bottom of the furnace as the bricklayers continued laying brick to the top. The relining was completed on February 11. Scaffolds were removed immediately and a drying fire started in the furnace. After five days of drying, the furnace was blown in February 17, with just thirty-one days elapsing between blowing out and blowing in.

In 1937, the Ironton furnace was last relined in an overall time of sixty-four days. Inasmuch as the furnace has been operating during the past six months on an average production of 660 tons a day, the record relining job means that thirty-three days output of pig iron amounting to some 21,780 tons will be made available to national defense. This saved production of pig iron, together with its ordinary complement of scrap, is enough to produce 44,100 tons of finished steel, the equivalent of the tonnage required to build approximately forty destroyers.

Gear-Tooth Hobbers Produced by Subcontracting

By subcontracting most of the foundry and machine work, General Electric is halving the 18 months' time it previously needed to build a 200-inch diameter hobbing machine to cut low-speed gears for cargo ship propulsion sets.

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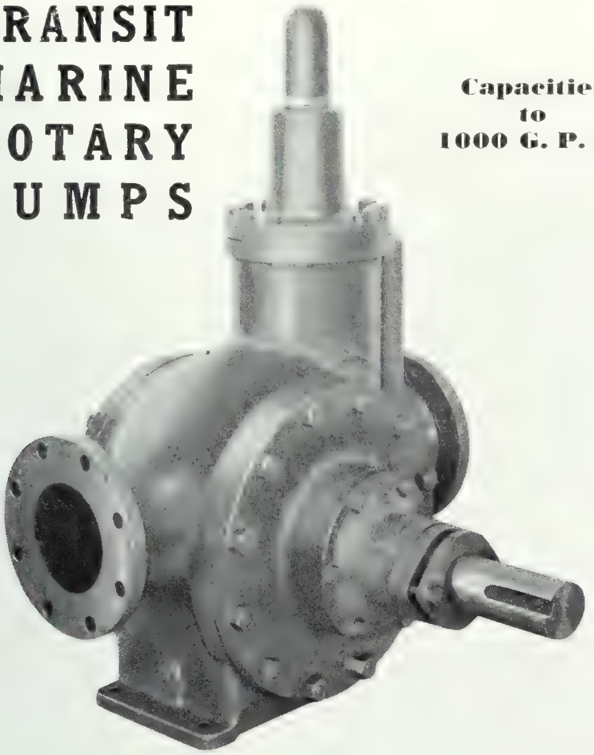
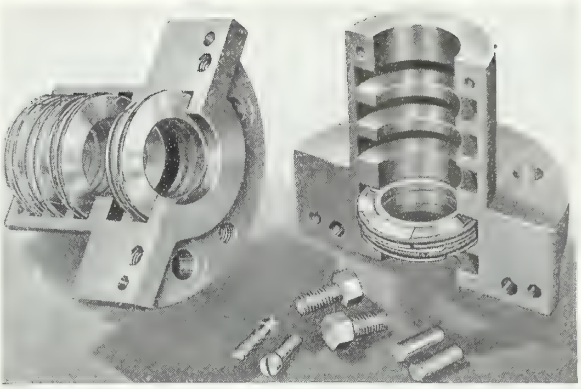


TRANSIT MARINE ROTARY PUMPS

Capacities to 1000 G. P. M.

National Transit Pump & Machine Company
OIL CITY, PENNA.



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That's why Viking production today is devoted largely to War demands. Every day scores of Viking Rotary Pumps are rushed to completion and shipped out to help with vital War production work from coast to coast. That's why, much as we regret it, sometimes we are unable to give usual prompt Viking service on orders received from valued customers in non-defense industries.

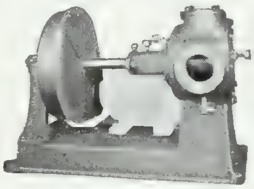

Fig. 40

To help you get utmost delivery from your present pumps, the Viking Service Manual explains and illustrates correct installation . . . how pumping efficiency may be stepped up . . . how some repairs and replacements may be avoided. It's free. Write for your copy today.

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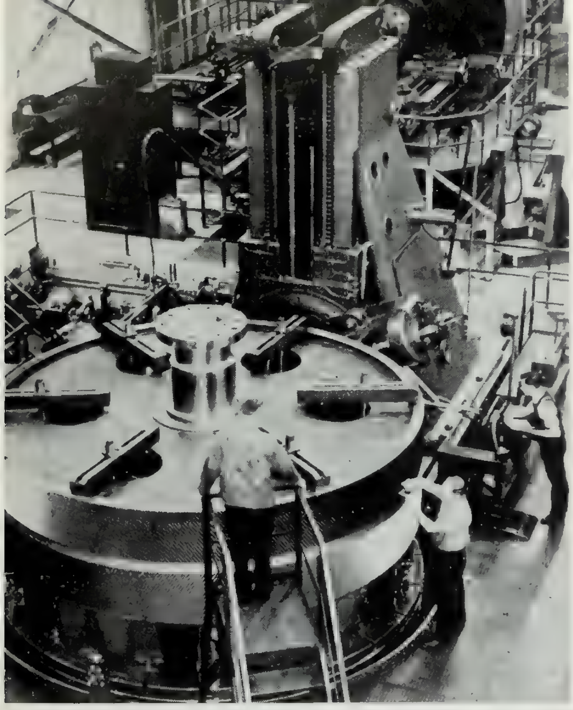


GEAR HOBBING MACHINES like this are now produced in half time formerly required

Production of the major parts for the machine is by 12 separate subcontractors in five states, and the miscellaneous parts manufacture is parceled out to 38 firms in seven states. Two foundries, one in Virginia and the other in West Virginia, cast the major parts. One of these foundries, plus a Navy Yard, a Pennsylvania construction company, a shipbuilder, and a machine tool builder take care of the annealing. Rough machining is handled by one Navy Yard, a steel mill, and a locomotive manufacturer. Two Navy Yards, a third foundry company, a second shipbuilder, a manufacturer of safes, the steel mill, and the locomotive firm do the finish machining.

Such extensive subcontracting for the production of a hobbing machine is especially remarkable in view of the ultimate precision with which the machine must operate. Finish cuts in bull gears are held to a tolerance of 0.0003 of an inch. Proper alignment of the machine to do this microscopically close work depends on careful checking and inspecting of the subcontracted work in progress.

Total weight of one of these hobbing machines is more than 275 tons. The two side bases together weigh 77 tons; the center bed 37 tons; the two stanchions a total of 60 tons; and the table 32 tons. Special well cars are used for transporting the heavy pieces from their scattered production points.

New Mixing Chamber for Tank Fire Fighting

A new "Evertite" Chamber, designed especially for easy installation on modern oil storage tanks of the pressure type, is announced by American-LaFrance-Foamite Corporation, Elmira, N. Y. Its purpose is to provide a simple yet effective method of applying a blanket of fire-smothering foam to burning oil surfaces.

The mixing chamber derives its name "Evertite" from the fact that an inspection cap can be removed, and a sealing diaphragm inspected, without releasing tank pressure.

The vapor-proof glass diaphragm is so installed as to prevent vapors in oil storage tanks from entering the body of the mixing chamber, from entering and condensing in chemical solution lines, or from escaping to the air when bottom or top plate, or inspection cap, is removed. The diaphragm, glazed in a metal frame, holds gas tank pressure, yet ruptures fully under foam pressure at time of fire, allowing free access of foam blanket to burning surface. Diaphragms are readily replaced. Frame may be unbolted and removed to work bench for new glass, or extra complete diaphragms may be carried in stock, ready for immediate installation.

The chamber is of expansion type design, with increasing cross-sectional area to ensure intimate mixing of chemical solutions, efficient formation of foam, and low velocity delivery. "A" and "B" solution inlets at bottom of chamber impinge within a baffle, assuring a thorough mixing. A small hole in bottom plate allows air to circulate within chamber, retarding corrosion; provides drainage; acts as telltale upon foam discharge. Top and bottom plates may be removed periodically for painting interior. There is ample clearance between body of chamber and tank shell for outside painting. The "Evertite" chamber is of exceptionally sturdy construction. The body is of sheet steel. The throat is a heavy steel casting, welded to the body.

Timber-Lock Skid Platforms

Faced with drastic restrictions on the use of steel for skid platforms, Yale engineers have perfected a platform which they call the Timber-Lock.

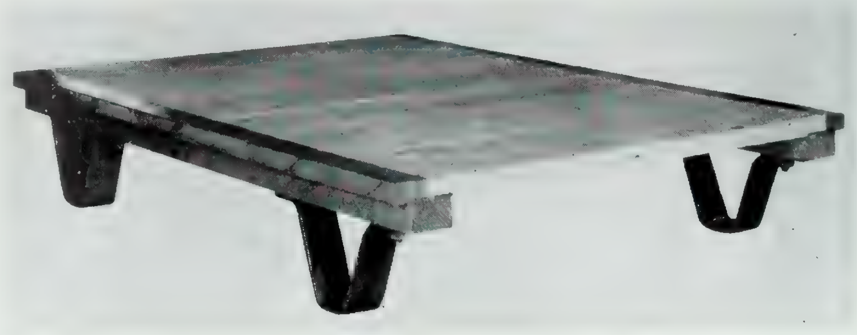
The Timber-Lock is constructed of specially selected tough oak by an interlocking process to tie supporting leg runners and deck boards into one unit.

This is accomplished by cutting a shallow rectangular groove across each end of the platform boards. Into each of these grooves, the supporting hard oak leg runner is tightly fitted—thus interlocking platform and runners in a vise-like grip.

Runner and deck boards are then bound together with specially cement-coated, spiraled helical nails, driven at double-rowed one-inch alternate intervals across the entire platform.

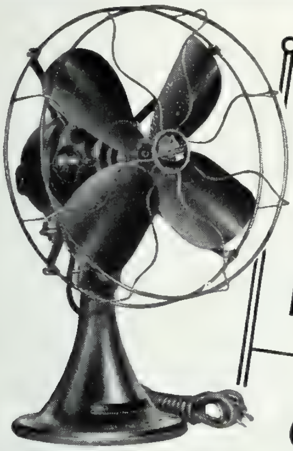
Legs are of the highest grade formed steel bars, joined to the leg beam by heavy forged steel bolts. Washers on top and bottom of the bolts guarantee rigid clamp. Also, the large diameter steel washer under leg bolt heads provides wide bearing point and insures increased leg stability.

The Timber-Lock is available in all standard widths and lengths, plain or armored end; also, vertical or standard leg design; four- or six-leg construction.



TIMBER-LOCK skid platform

Typical Ship's Galley equipped with Emerson-Electric Marine Fans



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Send for Marine Catalog No. 603 or 604

Catalog No. 603 gives full details on Emerson-Electric "Salt-Water" Marine Fans (available in 3 sizes). For information on "Fresh-Water" Marine Type Fans ask for Catalog No. 604.

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Emerson Marine Fans are made for 2 types of service:

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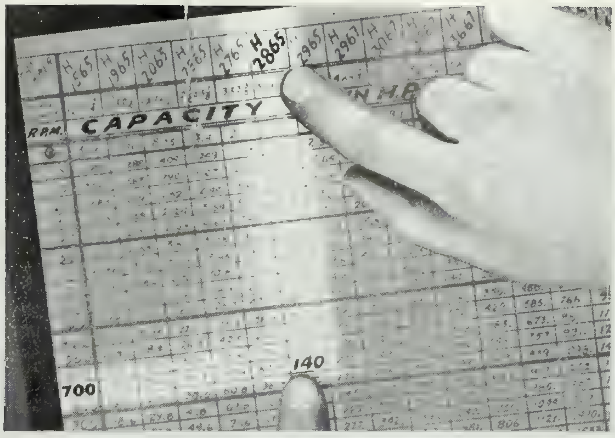

L-R SELECTOR CHART for flexible couplings

Flexible Coupling Selection Charts

Anyone without technical training, can easily and quickly find the right flexible shaft coupling for his use, for light or heavy duty, the size, the bore, the exact coupling for his horsepower and rpm, the kind of load cushions for the conditions of operation, the price —everything he desires to know— with the aid of the new L-R Selector charts supplied without charge to the industry on request, by Lovejoy Flexible Coupling Co.

L-R couplings are made in every size for every duty from ⅙ hp for pumps and small equipment, to 16¾″ bore for heaviest duty in big steel mills.

As an example of finding, suppose one wished to connect driving power of 140 hp, at 700 rpm, with a driven unit for greatly fluctuating loads requiring high protective resilience. The L-R Selector Chart on Type "H" shows almost instantly the coupling for this load.

Under bold heading "R.P.M." at the left of the table, the user of the chart runs his finger down to 700. That's the rpm of the drive unit with which the coupling is to be used. At 700, follow the figures horizontally to the right to 140. That's the horsepower of the drive unit.

A glance at the top of this column shows the L-R coupling for the purpose to be Type "H" 2865. The cushion material should be selected to accommodate the nature of the load "LX" (leather), applicable at any speed, for uni-directional load of a uniform nature, but not adapted for highly fluctuating or reversing loads.

Workmen Fail To Judge Weldability

Weldability of welding machines cannot be accurately judged by the average workman according to Charles H. Jennings and Alfred B. White, Westinghouse research engineers. Addressing a convention of the Association of Iron and Steel Engineers, the two men pointed out the need for establishing a standard and developing a scientific method of checking whether or not a machine meets these standards, so that a definite weldability rating can be given to welding machines.

Five types of welding units were tested by each of 20 operators participating in an experiment at the Westinghouse East Pittsburgh works. Although the characteristics of the machines differed widely, each could have been considered ideal for the job according to requirements established by different theories. The results of the test showing the time each welding machine was rated "best" and "poorest" were as follows:

Machine	*"Best"*	*"Poorest"*
1	5	4
2	4	2
3	2	6
4	4	4
5	4	2

Two possible conclusions may be drawn from a test of this kind, according to Mr. Jennings: under the conditions of the test the electrical characteristics of a machine are not critical, and weldability is a matter of personal judgment.

When questioned concerning the most desirable welding characteristics, the operators gave widely varying answers. Further investigation into the matter indicated that an operator's ideas on what welding characteristics were desirable, are dependent largely on the characteristics of the machine he normally uses in his work. Although a welding operator's judgment is important, it cannot be used as an infallible guide of weldability because there are no recognized standards.

Pomona Pump Acquires Westco

Pomona Pump Co., widely known as manufacturers of vertical pumps, announce the purchase of the Westco Pump Division of Micro-Westco, Inc., Bettendorf, Iowa.

The newly acquired business will be operated as Ponoma Pump Co., Westco Division, at 2621 Locust Street, St. Louis, Missouri, and manufacture continued from the St. Louis plant of the Pomona Pump Co. management and key personnel of Westco will be transferred to St. Louis to continue the manufacture and distribution of the complete line of Westco pumps through the same national organization which has been carefully built up by Westco over the past sixteen years.

Addition of the well-known Westco turbine type pump for industrial and marine application, also boiler feed and condensation units, side suction centrifugals, complete water systems, line and cellar drainers, rounds out the line of Pomona deep well, low lift, industrial, marine and municipal pumps. During the last few years Pomona has added the Little Chief turbine pump and also Pomona deep- and shallow-well jets.

Welding Rod Bender

Jackson Products, Detroit, Mich., announced a change in design of their electric arc welding electrode holder to include a rod bender. Welders now have a quick, convenient means for preparing the rod for use. The result is faster welding. The Jackson line includes ten fully- and semi-insulated models, ranging in capacity from 200 to 500 amperes.

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The Catalogs of Today Become the Technical Handbooks of Tomorrow

Intex Valves, Catalog No. 12-G5, a new folder describing hard surfaced integral seat globe stop valves for pressures to 1500 lbs. at 950° F. has just been issued by The Edward Valve & Mfg. Co., Inc., East Chicago, Ind.

Carrying the trade name Intex (Integral Seat Valves of Extra Value), these globe valves are specifically designed for high pressure and high temperature service, and incorporate many unique design features.

The disk and integral seat are faced with Stellite, a high hardness alloy, which is extraordinarily resistant to both erosion and corrosion.

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Edward Intex valves are available in ½ in. to 2 in. sizes in socket welding, flanged or screwed ends. Complete details are given in the new Intex folder.

Farrel Marine Gears in Action, published by the Farrel-Birmingham Company, Inc. A new and comprehensive 36-page booklet which describes and illustrates Farrel marine reduction gear drives now in service on principal types of ships. These include vessels for the U. S. Navy, U. S. Army Engineer Corps, U. S. Coast Guard, U. S. Maritime Commission and commercial craft such as tugs, trawlers, freighters, tankers, ferries, dredges and pleasure boats.

The editorial treatment of this new booklet is exactly what the name implies, "Farrel Marine Gears in Action." Illustrated with each vessel is an installation or factory view of the particular type of reduction gear employed, and, in many cases, arrangement drawings to show the relationship of the propulsion unit to other engine room equipment. The text is factual in nature, stating various problems peculiar to each different type of service and the solutions of these with reduction gear drive, giving engine speeds, shaft speeds, propeller diameters, pitches and other interesting data on service operation.

Included also are applications of Farrel gear drives with electric couplings, ladder and pump drives for dredges, Gearflex and Manger flexible couplings.

This non-technical booklet on application of marine reduction gear drive will be of general interest throughout the marine industry, and free copies are available upon request to the editor.

Simplified Controller of Condensate Purity, Catalog N-95-163 (1), describing the Leeds & Northrup Company's new signaling controller by the use of which, at exceptionally low cost, the industrial steam plant can now have dependable protection against damage caused by contaminated condensate.

Used where indicating and recording of condensate purity are not needed, this simple, automatic equipment tests condensate purity continuously. Its self-contained signal lights show whether condensate is above a specified minimum purity and is safe to use again, or whether it is below this limit and should be diverted to waste.

In addition, the instrument can operate external warning bells or lights. Or, it can provide automatic two-position control by regulating a motor-driven valve in the condensate line to dump impure condensate.

If the operator wishes to measure condensate resistance, he can do so by turning the instrument's control-setting dial until both signal lights are out, and reading the dial scale.

High Pressure Condensate Return, publication No. 3025 of the Cochrane Corporation, four-page bulletin covering the new Cochrane-Becker high-pressure condensate return system.

Fifty different industries are listed in which appreciable increases in production rates and excellent fuel savings are being made by the use of this unit in draining jacketed kettles, drying rolls, coil cookers, dryers, unit heaters, laundry and platen presses, and similar equipment that depends on uniformly high steam temperatures for efficient operation.

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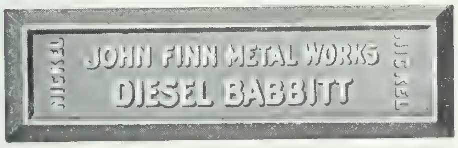

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On The Ways-

(Continued from page 69)

The other subsidiary yard is the North Carolina Shipbuilding Company at Wilmington, N. C., a nine-way plant which recently launched two Liberty ships.

Large Diesel Engine Contract

A contract in the amount of approximately $6,000,000, for furnishing the propelling machinery for four arctic ice breakers now under contract at the yards of the Western Pipe & Steel Co. of Los Angeles, Calif., has been awarded to the Fairbanks-Morse Co., Beloit, Wis.

The power plant upon each ice breaker will consist of six main diesel-electric generating sets providing power for three main motors which will develop a total of approximately 10,000 shaft horsepower, to drive three propellers, one forward and two aft.

200 Ships This Year From Pacific Yards

Pacific Coast shipyards, nearing the peak of their all-out war production effort, will launch approximately 200 emergency cargo vessels during the next 12 months for the Maritime Commission.

The estimate was made by Harry Morton, general counsel for the Oregon Shipbuilding Corporation and Kaiser interests.

Ships, he said, are now being launched at the rate of one a week and more at yards in Portland, Richmond, Calif., and Los Angeles, Calif.

Tugs To Be Named for Lighthouses

Twenty-five seagoing tugs, now under construction for the United States Maritime Commission, have been named for first-class lighthouses on American coasts, the Commission announced recently.

Names of the tugs, yards in which they are being built, and location of the lighthouses for which they are named follow:

At the **Avondale Marine Ways, Inc.,** New Orleans, La.: Seguin, Maine; Sand Key, Florida; Sanibel Island, Florida; Sabine Pass, Texas.

At the **Pendleton Shipyards Company,** New Orleans, La.: Matagorda, Texas; Aransas Pass, Texas; Sombrero Key, Florida; Dry Tortugas, Florida; Southwest Pass, Louisiana; Montauk Point, New York.

At the **General Ship and Engine Works,** East Boston, Mass.: Moose Peak, Maine; Boon Island, Maine; Gay Head, Massachusetts; Bodie Island, North Carolina; Great Isaac, Bahamas, off the Florida Coast; Tybee, Georgia.

At **Froemming Brothers, Inc.,** Milwaukee, Wisc.: Point Loma, California; Anacapa, California; Point Vicente, California; Point Arguello, California.

At the **Globe Shipbuilding Company,** Superior, Wisc.: Point Sur, California; Farallon, California; Point Cabrillo, California; Trinidad Head, California; Scotch Cap, Alaska.

Three Navy Launchings

A light cruiser and two heavy destroyers were launched on the Delaware River on Lincoln's Birthday.

The 10,000-ton cruiser Montpelier, on the ways only 14 months, was launched at the Camden, N. J., yards of New York Shipbuilding Corporation.

The destroyers, the Butler and the Gherardi, were launched at the Philadelphia Navy Yard four months ahead of the normal time required for this type of ship.

W. S. A. War-Risk Insurance

The War Shipping Administration announced February 23 that it is prepared to make available war-risk insurance on cargoes in seven trades at rates lower than those currently quoted by commercial underwriters. The Administration's rates are effective on cargoes shipped on United States merchant ships on and after March 1, 1942.

Under existing law, the Administration is permitted to provide war-risk insurance on United States vessels, their cargoes and crews only when it determines that such insurance is not available from commercial underwriters on reasonable terms and conditions. The Administration, which is also writing war-risk insurance on hulls and crews, announced on February 18 that it would provide insurance on cargoes carried by United States vessels.

The listings of such voyages on which the Administration will provide insurance and the rate follow:

Voyage	*Rate*
U. S. Atlantic to or from Egypt via Cape of Good Hope	5%
U. S. Atlantic to or from India, not east of Cape Cormorin, via Cape of Good Hope	5%
U. S. Atlantic to or from Africa, not beyond Cape Town	2½%
U. S. Pacific to or from Hawaii	1%
U. S. Pacific to and from Alaska beyond Seward	1%
U. S. Pacific—Coastwise	¼%
U. S. Atlantic—Coastwise and U. S. Atlantic—Gulf—	
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Others	¾%

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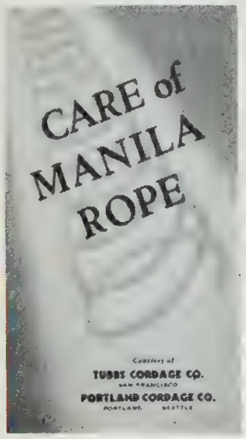

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Editorial Comment

Voluntary Censorship of Technical Journals

A recent meeting at Washington, D. C., (held under the joint sponsorship of the United States Maritime Commission and the Office of the Censor) called in for cooperative counsel the publishers and editors of the principal marine technical journals.

At that meeting, an agreement was made by the magazines present that their editors would be voluntary censors of the material published in their respective journals and would refrain from publishing information giving "aid and comfort to the enemy" and particularly information coming under seven classifications as follows:

(1) Details that indicate speed, horsepower, fuel compartmentation, and deadweight tonnage of all vessels.

(2) Photographs, illustrations and drawings of new types of ocean-going vessels.

(3) Descriptive articles of new types.

(4) Details of trial runs.

(5) Descriptions of national defense and military equipment on ships, or to be installed on ships.

(6) Detailed articles devoted to facilities of shipyards. (The U. S. M. C. restrictions regarding shipyard photographs, announced December 29, 1941, must also be observed.)

(7) Detailed description of ships' radio equipment.

All articles or advertisements hereafter appearing in PACIFIC MARINE REVIEW will follow the letter and the spirit of this agreement.

We ask the considerate cooperation of our readers and advertisers in making the adjustments necessary to carry out this wartime policy.

Unwise Taxation A Form of Sabotage

California tax collections were over a million dollars a day in 1941—a total of $368,687,000. These excessive taxes are unfair to the public, oppressive to business, and disheartening to the men engaged in the military service of their country.

The Governor need only direct the various departmental executives of the State Government to shut off non-essential, non-governmental activities. Positive orders from him in the prevailing crisis would bring about sweeping reductions in expenditures from one end to the other in the State Government.

A further waste of tax moneys threatens to demoralize and block California's best aid in the nation's all-out war effort.

"Bits and Pieces"

OUR GOOD SCOTCH MOTHER used to constantly remind us that "Mony a mickle makes a muckle," or recite that jingling incentive to carefulness and saving, which runs

"Little drops of water
Little grains of sand
Make the mighty ocean
And the pleasant land."

We are reminded forcibly of the truth imbedded in those lines when we read with interest the report of "The Willys-Overland Survey of Machine Tools, Manufacturing Facilities, and Man Power Available for War Production in Automobile Dealer Shops in the United States."

The manner of this survey and its results are thus described in the foreword to the report:

"On January 14, 1942, Willys-Overland Motors, Inc., forwarded questionnaires to 40,537 automobile dealers throughout the United States requesting information on the number of machines, skilled mechanics and other manufacturing facilities available in their shops.

"The purpose of the survey, first of its kind ever to be conducted, was (1) to reveal through an accurate inventory the manufacturing sources now existing in dealer shops which might be capable of turning out war work under certain subcontracts; (2) to enable the owners of these establishments to take an active part in the nation's victory effort; and, (3) at the same time, to keep machinery and workers employed in their own localities, thus avoiding the necessity of building new machinery and shifting labor to points where housing facilities might not be adequate.

"At the time the results of the survey were tabulated 4131 replies had been received from dealers in the 48 states, which represents slightly more than 10 per cent of the country's vast automobile dealer body. On the basis of these returns, engineers estimate that if *all* the existing machinery in *all* dealer shops could be pooled, a hypothetical arms factory of more than 250,000,000 square feet, or approximately 10 miles wide and 10 miles long, could be constructed. This would employ more than 185,000 skilled mechanics and would be equipped with more than 18,000 lathes, 15,000 grinding machines, 1400 shapers, 16,000 drilling machines, 52,000 welding units, 40,000 buffing machines, 1600 screw machines, 4209 spray painting units. It would also have a vast amount of miscellaneous equipment, all of which might be harnessed to the war effort.

"Our first job is to build up production—uninterrupted production—so that the United Nations can maintain control of the seas and attain control of the air—not merely a slight superiority, but an overwhelming superiority."

PRES. F. D. ROOSEVELT.

"The machinery and equipment in this vast plant would have an estimated total valuation of approximately $500,000,000. It could be used to manufacture many types of armament parts other than those requiring the highest types of precision work. For example, the lathes could turn out from $4 to $10 worth of work an hour on such jobs as thread cutting, shaft turnings, and others; the milling machines could be used for gear cutting. The grinders for smoothing down a variety of airplane, tank and marine parts.

"The actual machines listed in this survey are similar to thousands now being used in England's highly successful "Bits-and-Pieces" program which has brought small shops in that country into the war effort."

This report indicates a vast untapped reservoir of productive capacity that should be used by the nation in this all-out productive effort. It is probably a safe estimate that on a 24-hour basis these machine tools in ordinary commercial operation would be in use not more than ten per cent of the time.

Out Of My Way, Bums, I Got A Job To Do!

POSTERS like this one, reproduced from the "Calship" Log, are used in many shipyards.

A 1941 "Wreckord" of General Carelessness

Last year, when the need of human energy and natural resources proved more desperately urgent than ever before, the American people proceeded to liquidate more of their number and to demolish more of their mechanical facilities than in any year since the introduction of the motor car, according to a new booklet entitled "The Wreckord" just issued by The Travelers Insurance Company.

The booklet is the twelfth in a series issued annually and presents a comprehensive analysis of the facts about automobile accidents in which 40,000 persons were killed and almost a million and a half were injured in 1941. Both totals, it is pointed out, are the highest in the history of the automobile.

There were more than a million accidents during the year involving injury or death and several million others involving property damage only. Probably 1000 automobiles a week were demolished beyond repair.

"The nation, if it is to succeed in its victory program, simply cannot afford a continuation of this waste of life, of man-hours, of hospital space, of machinery and of morale," the foreword states. "The record of death and injury is one that should leave every American with a sense of shame and should move every one of us to resolve that it shall never happen again."

Some of the increase in deaths and injuries can be laid at the door of drivers under 18 years of age and older drivers with less than a year's experience at the wheel, the analysis shows. Accidents also increased somewhat out of proportion in the 18 to 24 age group. Gasoline consumption and motor vehicle registration increased last year, but not in as great proportion as did accidents. Pedestrian deaths and injuries actually dropped from the totals for 1940. Weighing all these factors, the company's statisticians find no explanation for the abnormal record other than that drivers were more careless and reckless than ever before.

Highlights from the annual report, based on official records from the 48 states, include the following facts:

Exceeding the speed limit was responsible for almost 42 per cent of the fatalities. In no other year since the record has been kept has speed loomed so large as a factor in accidents.

Two out of every three persons killed met death as the result of some reckless or illegal action on the part of a driver.

More than 90 per cent of all vehicles involved in fatal and non-fatal accidents were in apparently good mechanical condition at the time of the crash.

More than 82 per cent of all fatal accidents occurred on dry roads and 87 per cent happened in clear weather.

"These are the times that try men's souls.

"The summer soldier and the sunshine patriot will, in this crisis, shrink from the service of their country; but he that stands by it now, deserves the love and thanks of man and woman. Tyranny, like hell, is not easily conquered; yet we have this consolation with us, that the harder the sacrifice, the more glorious the triumph."

Tom Paine.
(Written at Valley Forge, 1776)

Binoculars Needed by Navy

The U. S. Navy needs several types of binoculars to equip its expanding fleet personnel.

Following the precedent of World War I, the Navy calls upon patriotic citizens who possess binoculars meeting service requirements to allow the Navy to use them in the war effort. Because of adjustments that must be made, the Navy wants only 7 x 50 and 6 x 30 glass of Zeiss, or Bausch and Lomb manufacture.

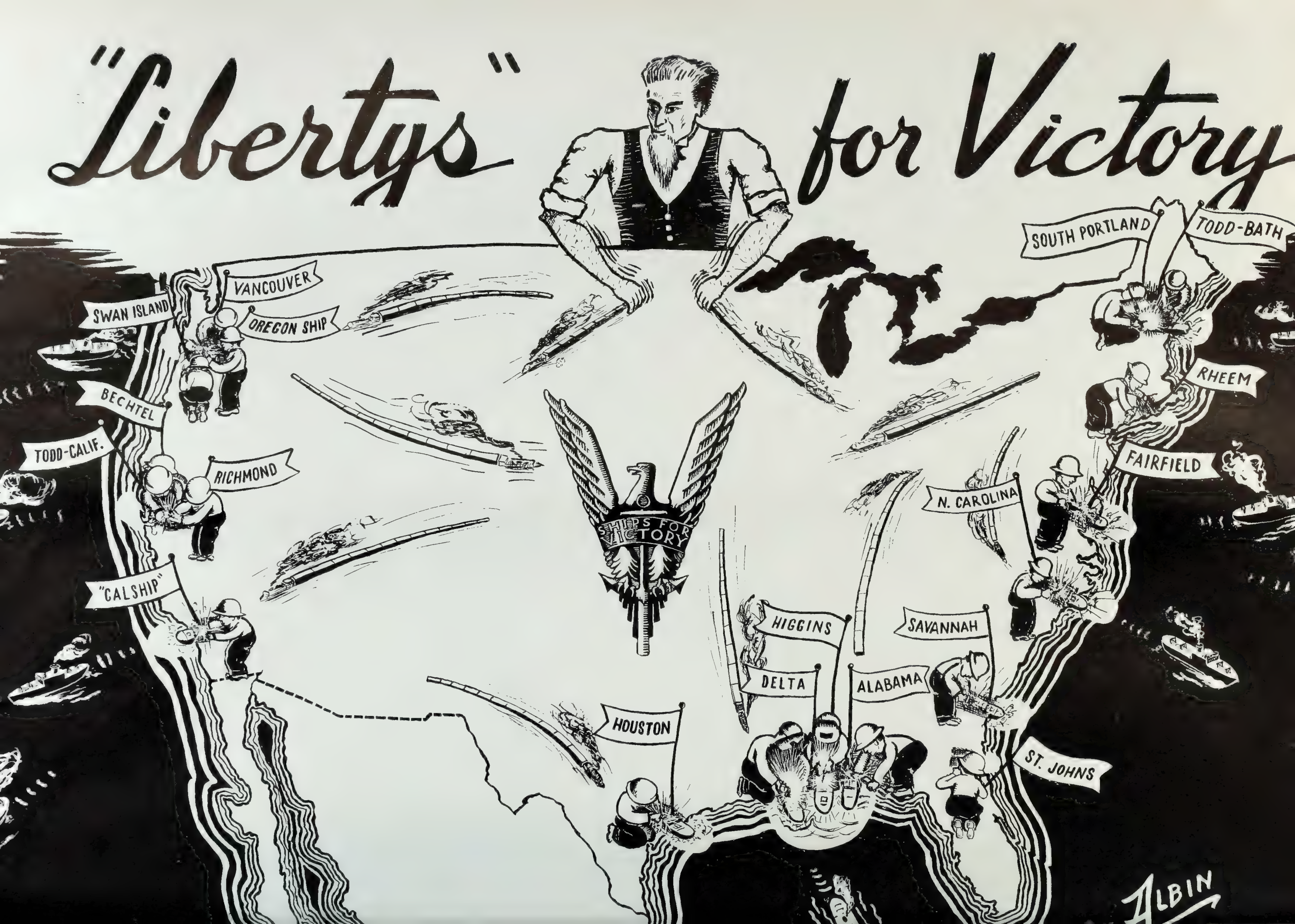
Those wishing to donate binoculars to the Navy are asked to forward them direct to the Naval Observatory, Washington, D. C., for inspection and acknowledgment. The Navy is not authorized to accept gifts or free loans, and if accepted, the binoculars will be purchased for $1.00 each. An identification tag with name and address of the sender should be fastened to each instrument.

During World War I, in a response to a direct appeal for private owners to furnish "Eyes for the Navy," 51,217 instruments were received and 31,000 were accepted for naval use.

The binoculars will be retained by the Navy Department for the duration of the war. They will be returned to the owners as soon after the war as is practicable.

"We must all understand and face the hard fact that our job now is to fight at distances which extend all the way around the globe."

Pres. F. D. Roosevelt.


"Libertys" for Victory
SOUTH PORTLAND
TODD-BATH
VANCOUVER
SWAN ISLAND
OREGON SHIP
RHEEM
BECHTEL
TODD-CALIF.
RICHMOND
FAIRFIELD
N. CAROLINA
SHIPS FOR VICTORY
"CALSHIP"
HIGGINS
SAVANNAH
DELTA
ALABAMA
HOUSTON
ST. JOHNS
ALBIN

"Libertys" for Victory

AN APPRECIATION OF THE SHIPBUILDING PROGRAM

by A. J. Dickie

HAVE YOU HEARD IT? Has it wakened you in the night?

That far off continuous rumble incessantly beating on your ears—

Hark, is that a siren?—a blackout? No, it is different. A locomotive whistle? Yes, that's it . . . a freight train . . . must be a long one; it is still rumbling—

Yes, they are rumbling all over this land of the free. By night and by day . . . you can hear it, for it is coming in greater volume than ever before in our history—

The freights filled with steel . . . with machinery . . . with equipment . . . that ships may be built.

The freights filled with war material . . . with munitions . . . with rations . . . that ships may be filled—

Over the great plains . . . up through the mountain defiles . . . down to the coastal valleys . . . East . . . West . . . South . . . North . . . the long freights are rumbling and their wheels click, and their bumpers grumble, and their whistles shriek in a great symphony of VICTORY FOR LIBERTY.

To the Pacific Coast . . . to the Atlantic Coast . . . to the Gulf Coast . . . these freights carry steel to the Liberty shipyards . . . steel and all else necessary for the ship.

To the docks with everything necessary for our boys overseas.

Every state sends its quota . . . every city has its part . . . that united nation—the United States of America —is building ships TO WIN A WAR!

A coordinated all-out effort. Expense? Profits? Risk? Not to be counted. Production and time are paramount.

The plates are hardly off the cars before they are being fabricated. The shapes are hot in the furnace and bent to shape without loss of motion. Welders hiss . . . riveters clang . . . cranes heave. And a ship is in frame . . . is outfitted . . . is tried . . . is at the dock loading while you are still wondering if it was a freight train that wakened you.

Offshore go these ships in convoy to Iceland . . . to Australia . . . to Britain . . . to India . . . to Russia . . . to China. Offshore with everything that your boy and my boy and all the boys of our allies need to win this war.

Who is building these ships? You and I and all of U. S. A. The mucker in the coal mines . . . the tender at the coke ovens . . . the shovel men in the Messaba ore pits . . . the engineer and brakemen on the ore trains—

The gate tender at the Duluth ore bins . . . the hatch tenders, deck hands, engineers, firemen, navigating officers on Great Lakes ore carriers . . . the crane operators at the Cleveland and Buffalo docks—

The specialists in the steel mill laboratories . . . puddlers, swampers, pourers, mill hands—

WORK NEVER STOPS ON THE LIBERTY SHIPS!

This hull, ready for her initial dip, was launched before sun-up at the "Calship" yard, Los Angeles, California.

Inspectors, clerks, administrators, executives . . . draughtsmen, designers, engineers, pattern makers, molders, foundry men, machinists, erectors—

The train crew of the freight that wakened you—

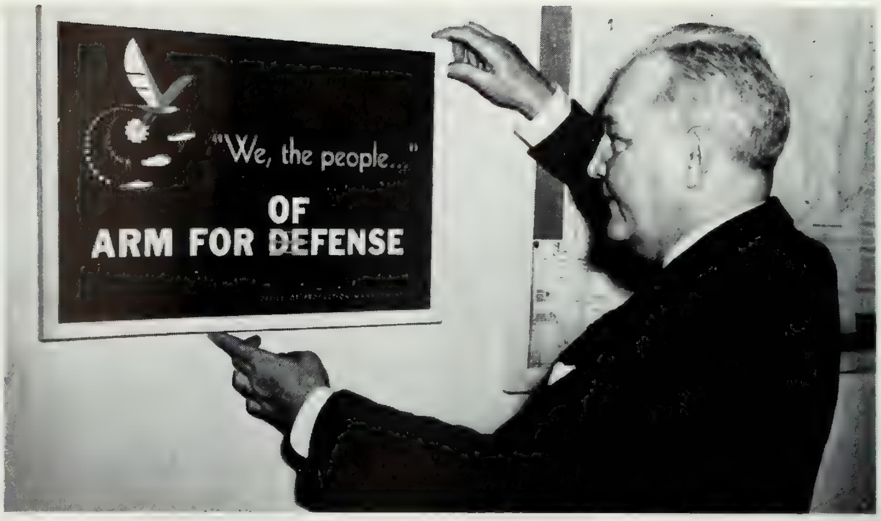
The shipyard staff and personnel—

The stevedore, the longshoreman, the captain, engineer and crew of the ship—

All these and many other crafts and arts . . . hands and hearts . . . prayers and hopes . . . are all wrapped up in that drone and rumble of the freight trains . . . that hiss and flash of the cutting torch and the welding arc . . . that staccato roar of the rivet hammer . . . that busy hum and rattle of the winches . . . that swish at the prows of grim grey ships slipping out to sea—In deadly earnest, laden with a steadfast purpose to achieve VICTORY and preserve LIBERTY.

Are these people all really working on the job? Listen, brother, most of these men are producing at a faster rate than the speed of these fast freights can supply.

One engineer working for Uncle Sam building shipyards averaged $15\frac{1}{2}$ hours, seven days a week, for eight months without a day off. His salary was not much more than welders were making on a 40-hour week basis. But he was fired with the idea that this big job had to be done. There are many like him. Hence, the delivery of ships two and three months ahead of schedule. I know shipyard executives who are working the same way.



COMMISSIONER MACAULEY CHANGES A POSTER

Here is a railroad executive in charge of providing transportation for war. All hours of the night his telephone will be ringing. Must have 20 cars at —— . . . 100 cars at —— . . . 50 cars at —— . . . not next week, or tomorrow, but noon today. To the everlasting credit of our American railroad men, it must be said that these orders are filled to the last car and on the minute almost without exception.

So, when you wake in the night with this rumbling distant roar in your ears, get into the spirit of this effort—

Thank God that you live in a land where the free work of free men may roll on to achieve an ultimate victory for free institutions in a free world—

Put up a prayer for the men who are running the freight . . . working the shipyard . . . loading the ships . . . and for the boys overseas who are fighting our war.

For all of our war depends on ships, but we are still free. Shipbuilders must realize this before it is too late. Every minute counts . . . only all-out work will win. Most shipbuilders are vitally aware.

Says Henry J. Kaiser, chief executive and chief spokesman for the newest hull erection plants for the big "Liberty" shipyards on the Pacific Coast, "We are operating shipyards not for profit but solely for the production of ships to win a war."

Says L. H. Korndorff, president of the Federal Shipbuilding & Dry Dock Co., one of the largest and most conservatively managed shipyards on the Atlantic Coast, "Damn the torpedoes! Full speed ahead!

"This is our fight for freedom. Shipbuilders in Holland, Belgium, occupied France, Denmark, and Norway now do shipbuilding for Germany or die. We still can save our hides by all-out work to keep our country free.

"But time is short. **The enemy is at our gates. Ships built in the Federal yards have been damaged or sunk by the enemy.** Among them were the Destroyer Kearny, the tanker R. P. Resar, and our C-2 cargo ship the Comet, later named the U. S. S. Pollux.

"They are victims for us to avenge. They are reasons for making every working moment count. If every man of us saves a half hour a day by stick-

THE TURNING CIRCLE OF A LIBERTY SHIP

THESE FIVE MEN form the United States Maritime Commission and are responsible for the construction and operation of the greatest fleet of new merchant ships in the world's history. Left to right: Thomas Woodward, Rear Admiral Emory S. Land (Chairman), Rear Admiral Howard L. Vickery (Vice Chairman), Captain E. Macauley, and John Carmody.

ing at the job, we can build from two to four more ships a year. That's our way to blast this challenge—by working hard at building more ships faster.

"WE CAN DO IT—

"By being on the job when the whistle blows to begin work and

"**Working** until the whistle blows to stop.

"By stopping any waste of materials and supplies.

"By being Always Alert for any form of Sabotage.

"By doing things the **safe** way.

"By putting a good share of our earnings into **Defense Bonds for our country, our future,** and our present peace of mind."

And that goes for you and me, brother—

We are all building these Liberty ships . . . these warships—

We must all work a little harder . . . play and sleep a little less . . . tighten up our collective belt . . . WIN THE WAR.

AN INDICATION OF THE POWER OF LIBERTY

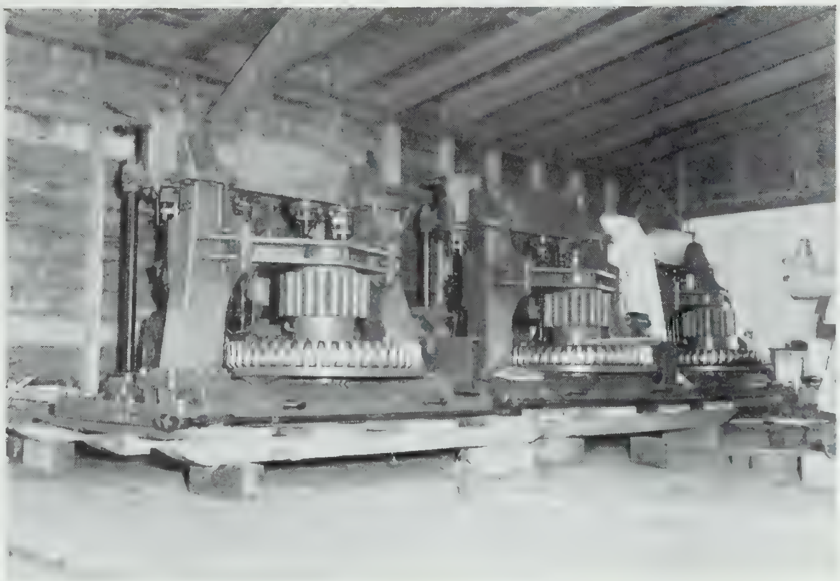
'TIS AN IDEAL SITUATION when the wives sponsor husband-built "Libertys."

"Oregonship" Sets "Liberty"

by D. L. Pratt

CONTRACTS PLACED during January for 143 new Liberty type of vessels, together with allotments for new plants and plant expansion, brings the total U. S. Maritime Commission investment in the Columbia River district up to an estimated total of approximately $320,000,000.

This investment is due to the excellent production record from that district made by the Oregon Shipbuilding Corporation. The work of this yard will be augmented shortly by the efforts of a sister yard, to be known as Kaiser, Inc., which is now under construction at Vancouver, Washington, just across the river from the parent plant. As both are to be operated largely by the same management and by use, wherever possible, of the same machine tools and equipment, the new plant is considered by the Maritime Commission as practically an extension of the plant at St. Johns. Both yards are completely financed by the Maritime Commission and are owned by that body with the shipbuilding corporation acting as managing agent on a fixed-fee basis, as is the case with all the plants building the Liberty type steamer for the U. S. Maritime Commission.



MUCH MATERIAL AND EQUIPMENT must be collected and properly housed in advance. Here are three Webster and Brinkly steam steering engines in the warehouse waiting to be installed.

Oregon Shipbuilding Corporation has been cited by the OPM as making the greatest efficiency showing of any of the "Liberty" yards in the country during the last quarter of 1941. Although dredging for the site was started only about a year ago, the plant to date has launched 14 Liberty type freighters and delivered three. Plants completed since have a few new features that show improvement, and the Oregon plant is also constantly improving its methods, as in the addition of a new assembly building at the present time, but generally speaking, it was and is still considered one of the finest and most efficient plants ever built.

In general arrangement and facilities, it was duplicated almost identically by the Richmond Shipbuilding Corporation's plant at Richmond, California, which was described in the January edition of PACIFIC MARINE REVIEW, so that a detailed description would only be a repetition. It is laid out on a production or flow basis. Railroad deliveries come right into the yard and are delivered direct to the plate and shape racks.

From the racks, the steel flows into the plate shop to the present assembly platforms, and from there to the ways. Soon, however, an assembly building will be completed where present assemblies can be put together under cover. Here large sections of the ship's hulls can be welded, piped, wired, painted and made ready to go into the hull as complete units. The plate shop is arranged in bays, each being equipped with machines to handle certain types of steel. Through these shops, carrying out the same idea as in an automobile factory, the steel

Shipbuilding Records

ADMINISTRATION BUILDING, OREGON SHIPBUILDING CORPORATION

travels in a straight line to the present assembly space.

Shops and warehouses are grouped at the inboard end of the 11 ways and along the fitting basin. They include mold loft, plate shop, machine and blacksmith shops, general and outfitting stores, vocational training quarters, a large administration building, yard office and outfitting office.

Parking areas are on the dredged, filled-in land, and not only do they now accommodate 7000 cars, but are being rapidly expanded. The transportation of workmen back and forth is becoming an acute problem, but the company is conducting what is called a transportation bureau, which is making studies that are gradually improving the situation. The men are being encouraged to buy buses in groups. Routes workmen take going to and from work are being studied so that the men may double up in their cars, and new highways, one with five lanes, are being built. The five-way lane will carry four lanes of traffic one way, and one lane the other way at peak traffic hours.

The outfitting dock is on the north side of the plant. It is 2250 feet long by 200 feet wide and generally accommodates five vessels. This number can be more than doubled, and, at time of this writing, there were twelve vessels at this dock.

Each of the eleven building ways is served by craneways adjoining. There are also Whirley trucks in the plate yard and on the outfitting dock, and quite a fleet of truck cranes for handling lighter materials. Of the large cranes, there are six made by the Washington Iron Works on the outfitting docks; two Mark Colby cranes; ten Americans on the ways, and two more Washingtons in the plate yard. Some of the special equipment includes: Baldwin-Southwark bending rolls; a Travograph, which is a multiple cutting arrangement; and Union-Melt welding machine. Most of the machinery for major uses in all of the Todd-Kaiser "Liberty" ship plants is of about the same nature.

Tools and equipment in the Plate Shop and Machine Shop include:

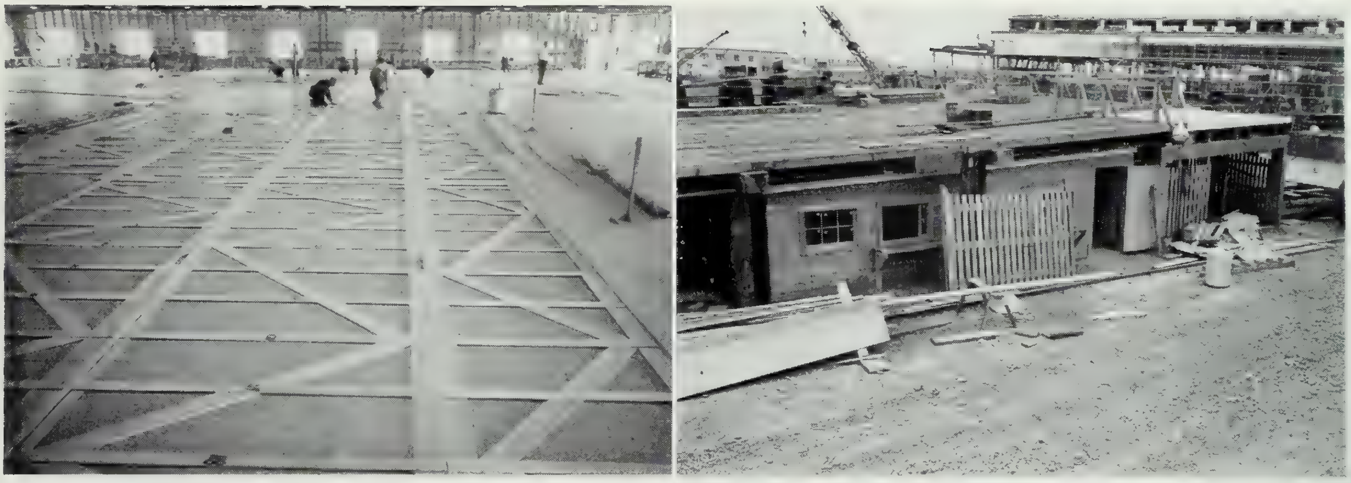
Plate Shop

6	5- and 10-ton Bridge Cranes
6	5- and 10-ton Bridge Cranes
2	32′ Plate Bending Rolls
1	200-ton Hydraulic Bending Press
1	400-ton Hydraulic Bending Press
2	200-ton Hydraulic Bending Presses
1	100-ton Mechanical Bulldozer
1	54″ Ryerson Friction Saw
1	48″ Ryerson Friction Saw
1	1″ thru 1″ Horizontal Punch
1	Vertical Punch—"Allstater"
1	¾″ thru 1″ Horizontal Punch
1	Vertical Punch—Hilles-Jones
1	Vertical Punch—Cleveland
2	Bending Slabs
1	4″x4″x⅝″ Vertical Angle Bending Roll
1	No. 10 Planograph for Dual Torch
1	No. 41 Travograph—200-Volt
10	No. 4 Radiagraph with Tachometer
4	No. 4 Radiagraph with Tachometer
10	No. 10 Radiagraph with Dual Torch
4	No. 10 Radiagraph with Single Torch
5	48″x96″ 4½-ton Trucks
1	Short Angle Furnace with Pyrometer
2	Angle Furnaces

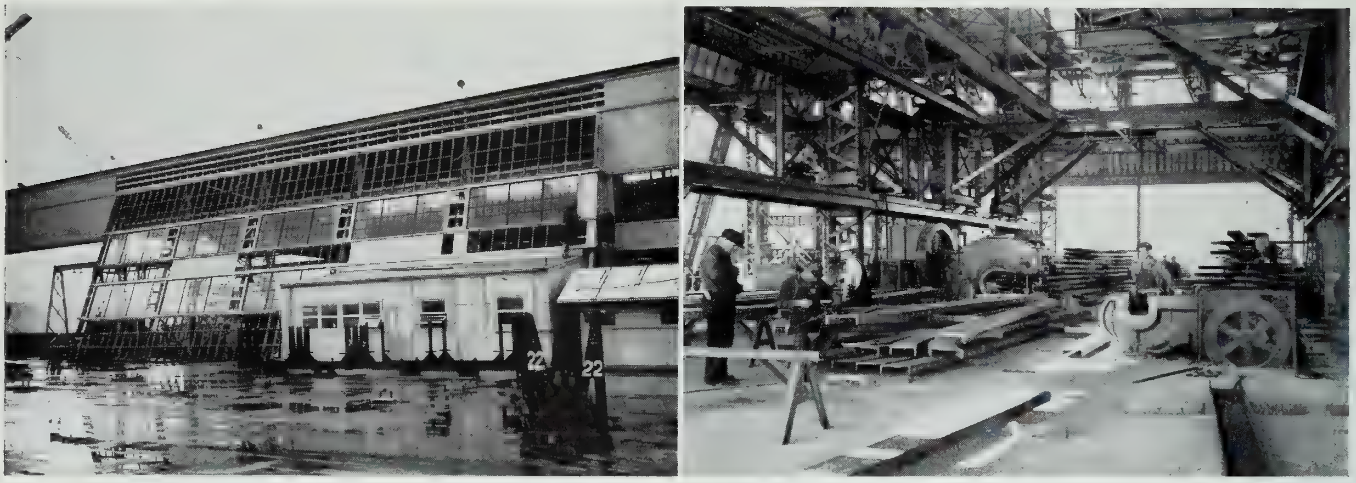
Machine Shop

1	18″x12′ Lathe
1	14″x 8′ Lathe
1	16″x10′ Lathe
1	53″x22′ Lathe

PARAMOUNT IN ANY MODERN SHIPYARD PLANS are facilities for handling heavy materials with facility and dispatch. Here is a Washington Iron Works' portal tower revolving crane being set up at "Oregonship."



THE MOLD LOFT FLOOR (left) at "Oregonship" is of ample dimensions to lay out complete deck or shell plating. In this room, the shipyard work begins, coming to fruition on the ways. Head of one way is shown at right.



IN THE PLATE SHOP (exterior at left above), the wooden templates from the mold loft are reproduced in steel. Some of the machines for this purpose are shown in the interior view above.

ANOTHER EXTERIOR VIEW of the plate shop, and a view of part of the welding racks and plate storage at the head of the ways.

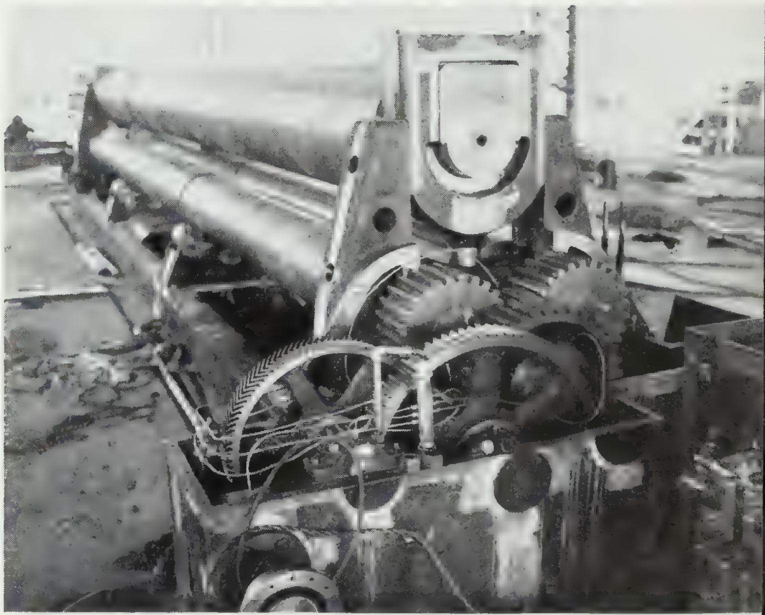
1	10″ Bench Lathe
2	21″ Drill Presses
2	24″ Drill Presses
2	Milling Machines
1	300-ton Wheel Press
1	2″ Bolt Threading Machine
1	300-ton Hydraulic Jack
1	Forming Slab—Dwg. 748-18-4
1	51″ Vertical Boring Mill
1	10″x10′ Boring Bar Complete
1	12-ton Arbor Press
1	Worthington Compressor
1	Fuller Rotary Compressor

The officers of the Oregon Shipbuilding Co. are as follows: Presidency is vacant, as Chas. Shea, who held this position, recently passed away; vice president and general manager, Edgar F. Kaiser; secretary and administrative manager, J. F. Reis; treasurer, G. G. Sherwood; chief engineer, Albert Bauer; yard superintendent, Russels Hoffman.

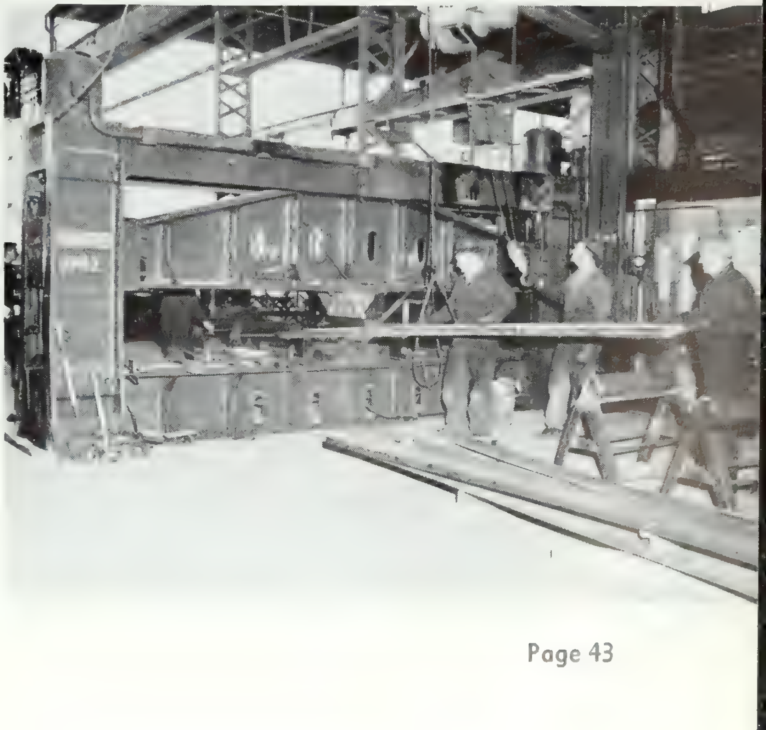
The new Vancouver plant, which will be operated under the name of Kaiser, Inc., will have eight ways and will cost $12,000,000. It starts out with a contract for 65 Liberty freighters. It is expected that the Vancouver plant, when in operation, will hire about 14,000 workmen. The Oregon Shipbuilding Corp. at present employs 21,000, running seven days a week, 24 hours per day, under terms of the A. F. of L. contract. The Vancouver plant, in spite of its smaller number of ways, is expected to be more efficient even than the Oregon plant, as it incorporates many improvements and facilitating features that have been learned from the experience of operating the other plant. As at St. Johns, of course, the steel storage areas, plate shops, assembly plant and ships' ways will be arranged in line so that there will be a continuous flow as in an auto plant. Shops will be behind the ways, and down river will be the outfitting docks, running parallel with the stream. Various fitting shops will be arranged behind the docks, with parking area and administration building behind the outfitting area. The plant will occupy a site fronting on the north bank of the Columbia River, 1½ miles above the Interstate Bridge, leased from private owners and the Port Commission. It will occupy more than a mile of frontage on the river. The program is very emphatic, as on most of Henry J. Kaiser's undertakings. Plant started January 15; first keel, April 15; first launching, July 15.

Bending Machines

U. S. PIPE
BENDING MACHINES



32-FOOT PLATE
BENDING ROLLS



200-TON
BENDING PRESS

American Yachts

THREE-MASTED STEEL SCHOONER ATLANTIC (upper left), holder of the transatlantic sailing record since 1905, is now with the U. S. Coast Guard. She is a gift from Gerald B. Lambert, who acquired her from the late Cornelius Vanderbilt.

THE DIESEL YACHT SEVENTEEN (upper right) is now in use by the Navy, given by Sinclair G. Stanley of Chicago. Built in 1930, she was formerly called Truidone.

●

THE FOUR-MASTED BARK SEA CLOUD, said to be the largest sailing yacht ever built, was given to the Coast Guard by Mrs. Joseph E. Davies, wife of Special Assistant to Secretary of State Hull. She was known as the Hussar when built in Kiel, Germany, in 1931.

CAREFREE NO LONGER is the drone of speedboats, the glistening elegance of steam yachts, or the dazzling spread of white canvas in the wind, for yachting, like other peacetime luxuries, is a thing of the past. Those same sleek craft, which last year were pleasure bent, are now being rapidly converted to the grim business of war.

Ideally suited as auxiliaries for coastal protection work, millions of dollars worth of luxurious American sailing craft, houseboats, cabin cruisers and speedboats are being taken over by the Government so that regular Navy and Coast Guard vessels may be released to direct combat service.

America has called upon its yachtsmen to sacrifice their beloved craft for the sake of their country, and with true patriotism they have responded without quibbling. Many have asked no compensation but have made outright gifts of their yachts to Uncle Sam.

YACHTS FOR TRAINING

●

VEMA, three-masted schooner, is being used for training American merchant seamen. She was a gift of Mr. and Mrs. Unger Vetlesen of New York.

Go to War!

The Navy has urgent need for every one of these boats. Some have already been converted for submarine detection and chasing, others for patrol duty, and still others for weather observation. Some of the larger craft are serving as training vessels for the thousands of men who are being recruited for service with the Coast Guard and the rapidly expanding merchant marine.

The job of requisitioning all available vessels for war service and determining the just compensation to be made therefor, is one of the functions of the War Shipping Administration, whose administrator, Rear Admiral Emory S. Land, is also chairman of the United States Maritime Commission. Admiral Land's staff of experts on small craft is headed by wiry, energetic Edmond J. Moran, operator of a large fleet of New York tugboats, who is giving his services to the Commission. Working with him are a handpicked group of marine surveyors and yacht brokers specially qualified to act as appraisers in determining by thorough examination and inventory the fair price to be paid the owner for each craft the Government requisitions. They are doing a difficult job conscientiously with a full awareness of their double responsibility of protecting the Government, and at the same time assuring that the owners receive proper compensation.

About 550 craft, including fishermen and tugs as well as pleasure boats, have already been acquired, and it is expected that negotiations with the owners of all other useful craft will be completed within a few weeks.

Among the yachts which have been given outright to the Government are the following: **Alva,** W. K. Vanderbilt, New York; **Edmar,** Major Edward Bowes, New York; **Truant,** Henry Ford, Dearborn, Mich.; **Intrepid,** W. P. Murphy, Chicago; **Gypsy,** Robert F. Herrick, Boston; **Savitar,** Joseph H. Seaman, New York; **Katoura,** Alfred L. Loomis, New York; **Caroline,** Leo Spitz, Chicago; **Cheng Ho,** Mrs. A. E. Archbold, Washington, D. C.; **Marionette,** John N. Matthews, New York; **Now Listen,** Arthur Lehman, New York; **Seventeen,** Sinclair G. Stanley, Chicago; **Sea Otter,** H. W. Cannon, New York; **Alimar,** J. J. Ryan, New York; **Joseph Conrad II,** Huntington Hartford, New York; **Sea Cloud,** Joseph E. Davies, Washington, D. C.; **Broadwater,** R. R. M. Carpenter, Wilmington, Delaware; **Jo Ann II,** Joseph Freeman, Brooklyn; **Atlantic,** Gerard B. Lambert, New York; **Innisfail,** Gerard C. Smith, New York; **Vema,** Mr. and Mrs. G. Unger Vetlesen, New York; **Nenemoosha,** Mrs. Jesse Ball duPont, Wilmington, Delaware; and **Sea Love,** Innis O'Rourke, New York; **Icacos,** Irenee duPont, Wilmington, Delaware; **Araner,** John Ford, Los Angeles, Calif.; **Awab,** John M. Simpson, Chicago.

Equivalent Shipbuilding Sections

Riveted and Welded

by D. W. Dickie, N.A.

SAVING WEIGHT without loss of strength in ship construction is fundamental, as every ton saved means an extra ton of carrying capacity.

In a riveted ship, an angle stiffener has the short flange riveted to the plate. Conversely, in a welded ship, the stiffener has the toe of the long flange welded to the plate, forming a virtual channel with one flange in the plate.

For example, if the plate is $\frac{5}{16}''$ thick, and the stiffener is $4'' \times 3'' \times \frac{5}{16}''$, the 3″ flange would be riveted to the plate with ⅝″ rivets, 4⅜″ centers, or conversely, the toe of the 4″ flange would be welded to the plate. (Fig. 1.)

Admittedly, the plating adds something to the strength of the riveted stiffener, but, since the plating is very close to the neutral axis of the angle, the stress put upon the stiffener from the action of the sea striking the side of the house tends to buckle the plating and strain the edge of the long flange.

In the case where the stiffener is welded to the plating, making a virtual channel or center sill section, there is considerable latitude in the amount of plating that can be assumed as contributing to the formation of the virtual channel or center sill section. However, nothing is gained by taking in more than sufficient plate to bring the neutral axis about 38 to 40 per cent of the total depth of the section from the back of the plate, or 60 per cent from the unattached flange. If excessive plating is included, the tendency is for it to buckle and not contribute to the strength of the section, and also the neutral axis is moved too close to the plating to have the metal serve properly as a compression flange for the section treated as a girder.

A stiffener on side wall plating serves three functions, and failure to adequately take care of one often disqualifies on the other two.

1. It must be strong enough to serve as a beam to withstand the force of the sea striking the side of the house. This is indicated by the use of the section modulus, which is the moment of inertia of the section divided by the distance of the extreme fiber from the neutral axis.

2. As a column, it must support the weight of any load on the deck above indicated by the use of the square of the length divided by the square of the radius of gyration, or customarily (L) divided by (r).

3. It must provide space for joinerwork doors, mechanism of windows, plumbing, electrical work, and similar devices that are installed in the side walls between the outside plating and the inside sheathing.

4. It must be as light as possible to save weight.

Taking the considerations in order:

1. The $3'' \times 4'' \times \frac{5}{16}''$ stiffener has a section modulus of 1.23 inches cubed about the neutral axis parallel to the three-inch flange and, when so used, has been found by experience to be adequate. The rivet holes weaken the section and the support of the plate adds to its strength, so the section modulus of the full cross section of the stiffener has been used herein.

2. The use of the same angle with the toe of the long flange properly welded to the plate forms a virtual channel $4\frac{5}{16}$ inches deep with two flanges $3'' \times \frac{5}{16}''$ (Fig. 2).

Approximating the moment of inertia (inches)^4 from the tables

Web $3\frac{11}{16}'' \times \frac{5}{16}''$ = 1.3057
Two flanges $3'' \times \frac{5}{16}''$ = 7.5156

(Inches)^4 8.8213

Dividing by half the depth of the stiffener gives a section modulus (inches)^3 of 4.0911

Comparing the $4'' \times 3'' \times \frac{5}{16}''$ angle stiffener as a beam to resist load—riveted 1.23 (inches)^3—and—welded 4.0911 (inches)^3—we find the same stiffener as welded is 3.326 times as strong as when riveted.

Since the extra strength is not needed, it is possible to order an 8″ standard structural channel and cut it to form two angles 4″ x 2.26″, web thickness .220″, flange thickness ⅜″ nominal. The long flange will lose something by waste from the cutting, so the welded stiffener will be a virtual channel 4″ x 2.26″, with one flange buried in the plating (Fig. 3).

The channel should preferably be cut with a hydrogen flame, but, when it has to be bent or cambered cold after cutting and before being assembled in place, it should be mildly annealed by heating.

Approximating the moment of inertia (inches)^4 from the tables

Web 4″ x .220″ = 1.1733
Two flanges 2″ x ⅜″ = 4.9452

Moment of inertia (inches)^4 6.1185

Dividing by half the depth of the stiffener, the section modulus (inches)^3 = 3.0592, which is still larger than the —1.23 (inches)^3—of the riveted stiffener.

2. Treating the $3'' \times 4'' \times \frac{5}{16}''$ riveted stiffener as a column with a length of 7′6″. From the tables the radius of gyration about the neutral axis parallel to the plate is 1.27 inches.

Likewise, the 4″ x 2.26″ angle with .220″ web thickness and ⅜″ flange thickness that has been cut from the 8″ standard structural channel and welded to the plate would have a length of 7′6″. The radius of gyration is calculated by dividing the moment of inertia—6.1185 (inches)^4 as found before by the cross sectional area of the virtual channel 2.41 square inches—= the square of the radius of gyration—$r^2 = 2.5388$—and—$r = 1.59$ inches.

Since the length of the stiffeners is the same in both cases, (L) divided by (r) would be inversely proportional to

FIG 1

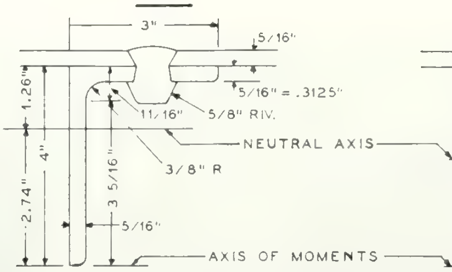


FIG 2

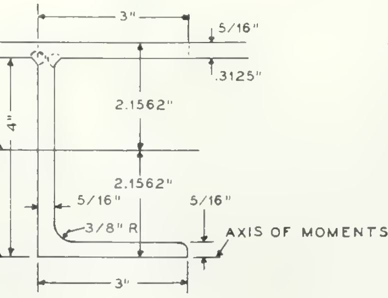
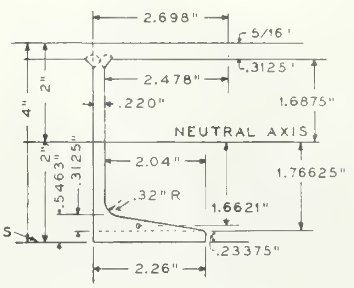


FIG 3



AREA SQ.IN. MOMENT

4.0000 X 0.3125 = 1.2500 X 2.0000 = 2.5000
2.6875 X 0.3125 = .8398 X 3.8438 = 3.2282
A = 2.0898 X 2.741 5.7282

0.3125 X $(2.74)^3$ = 6.4283
3.0000 X $(1.26)^3$ = 6.0011
DEDUCT 12.4294
2.6875 X $(0.95)^3$ = 2.3041
3 | 10.1253

MOMENT OF INERTIA = 3.3751

SECTION MODULUS $\frac{I}{Y} = \frac{3.3751}{2.741} = 1.2318$

RADIUS OF GYRATION $\frac{I}{A} = \frac{3.3751}{2.0898} = r^2 = 1.6150$, $r = 1.2708$

AREA SQ.IN.

4.3125 X 3.0000 = 12.9375
3.6875 X 2.6875 = 9.9102
A = 3.0273

3.0000 X $(4.3125)^3$ = 240.6055
2.6875 X $(3.6875)^3$ = 134.7531
12 | 105.8524

MOMENT OF INERTIA 8.8210

SECTION MODULUS $\frac{I}{Y} = \frac{8.8210}{2.1562} = 4.091$

RADIUS OF GYRATION $\frac{I}{A} = \frac{8.8210}{3.0273} = r^2 = 2.9138$, $r = 1.7070$

AREA SQ.IN. MOMENT

4.0000 X 0.2200 = 0.8800 X 2.0000 = 1.7600
2.0400 X 0.2337 = 0.4767 X 0.1169 = 0.0557
1.0200 X 0.3125 = 0.3188 X 0.3379 = 0.1077
2.4780 X 0.3125 = 0.7744 X 3.8437 = 2.9766
A = 2.4499 X 2.0000 4.9000

2.2600 X $(2.0000)^3$ = 18.0800
2.6980 X $(2.0000)^3$ = 21.5840
DEDUCT 39.6640
2.0400 X $(1.7663)^3$ = 11.2418
2.4780 X $(1.6875)^3$ = 11.9083
3 | 16.5139
ADD 5.5046
$\frac{2.0400 \times (0.3125)^3}{36}$ = 0.0017
0.3188 X $(1.6621)^2$ = 0.8807

MOMENT OF INERTIA 6.3870

SECTION MODULUS $\frac{I}{Y} = \frac{6.3870}{2.0000} = 3.1935$

RADIUS OF GYRATION $\frac{I}{A} = \frac{6.3870}{2.4499} = r^2 = 2.6070$, $r = 1.6146$

FIG 4

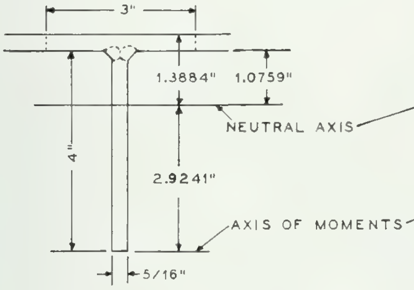
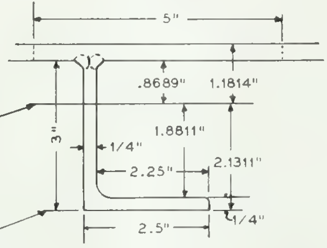


FIG 5



AREA SQ.IN. MOMENT

4.3125 X 0.3125 = 1.3477 X 2.1562 = 2.9058
2.6875 X 0.3125 = 0.8398 X 4.1562 = 3.4906
A = 2.1875 X 2.9241 6.3964

0.3125 X $(2.9241)^3$ = 7.8130
3.0000 X $(1.3884)^3$ = 8.0288
DEDUCT 15.8418
2.6875 X $(1.0759)^3$ = 2.8915
3 | 12.9503

MOMENT OF INERTIA 4.3168

SECTION MODULUS $\frac{I}{Y} = \frac{4.3168}{2.9241} = 1.4762$

RADIUS OF GYRATION $\frac{I}{A} = \frac{4.3168}{2.1875} = r^2 = 1.9734$, $r = 1.4048$

AREA SQ.IN. MOMENT

2.2500 X 0.2500 = 0.5625 X 0.1250 = 0.0703
3.0000 X 0.2500 = 0.7500 X 1.5000 = 1.1250
5.0000 X 0.3125 = 1.5625 X 3.1562 = 4.9316
A = 2.8750 X 2.1311 6.1269

2.5000 X $(2.1311)^3$ = 24.1955
3.0000 X $(1.1814)^3$ = .2446
DEDUCT 32.4401
2.2500 X $(1.8811)^3$ = 14.9765
4.7500 X $(0.8689)^3$ = 3.1160
3 | 14.3476

MOMENT OF INERTIA 4.7825

SECTION MODULUS $\frac{I}{Y} = \frac{4.7825}{2.1311} = 2.2441$

RADIUS OF GYRATION $\frac{I}{A} = \frac{4.7825}{2.8750} = r^2 = 1.6635$, $r = 1.2898$

COMPARATIVE ANALYSIS OF VARIOUS TYPES OF WELDED SECTIONS WITH A RIVETED SECTION

David W. Dickie

(r), and the stiffener with the greatest (r) would carry the greatest load.

The weight of the 3″ x 4″ x $\frac{5}{16}$″ riveted angle is 7.2 pounds per foot and the weight of the angle formed from one-half of an 8″ structural channel is 5.75 pounds per foot which permits a saving in weight.

Both methods have the same space in the wall between the outside plating and the inside sheathing.

Theoretically, a plain flat bar 4″ x $\frac{5}{16}$″ welded to the plate (Fig. 4) should replace the 4″ x $\frac{5}{16}$″ angle, but, practically, the 4″ flange of the angle is only $3\frac{11}{16}$″ and there is a ⅜″ fillet in the bosom of the angle which reduces it to $3\frac{5}{16}$″ net. Less force is required to buckle the standing flange of a stiffener 4″ high, where it is unsupported, than where it is supported laterally for $\frac{11}{16}$″ of its height. In the case of the 4″ x 2.26″ angle cut from the structural channel the 2.26″ flange gives lateral support that is entirely missing in the case of the flat bar.

Also the .220″ flange of the 4″ x 2.26″ angle requires less heat for a light pass on each side than the $\frac{5}{16}$″

(Page 49, please)

STEEL REQUIREMENTS FOR MERCHANT SHIPBUILDING

by Rear Admiral H. L. Vickery

Vice Chairman, U.S.M.C.

A MOST IMPORTANT phase of the shipbuilding program is that of supplying the steel. The efforts of the shipbuilders will be of no avail if the steel industry cannot meet the schedules. However, I have been assured that the industry not only can but will meet the requirements of this vastly expedited program.

With the new schedules of production calling for 8,000,000 tons in 1942 and 10,000,000 tons in 1943, the Commission's requirements for the two years will be approximately 6,500,000 tons of steel. During 1942, the requirement will be nearly half of that amount, or approximately 3,200,000 tons. This will be comprised of 2,575,000 tons of plates, and 625,000 tons of shapes. The peak load will be reached in July, when a total of 299,000 tons will be required, of which 239,283 tons will be plates and 59,821 tons will be shapes. This tonnage, which averages approximately 268,000 tons per month throughout 1942 and will be slightly higher in 1943, must be received in the sequence required by the yards for the proposed rate of construction.

The importance of maintaining the proper sequence in the receipt of steel plates and shapes cannot be over emphasized, for tonnage, as such, has no significance if it is not composed of the specific items in proper sequence required by the yard's fabricating schedule. There are several cases which come to my mind where the shipbuilders' production came to a standstill despite the fact that there were thousands of tons of steel in the shipyard—thousands of tons of steel that were of no value until certain required items which were holding up construction were delivered from the mills.

ONE OF THE BUSIEST MEN IN WASHINGTON is Rear Admiral H. L. Vickery, Vice Chairman of the U. S. Maritime Commission, shown here with his competent secretary, Miss Irene Long.

The Commission has been advised by the War Production Board that many of the difficulties which have been experienced are attributable to the fact that the high-rated demand on the sheared mill exceeds the mill's capacity. This capacity is approximately 350,000 to 360,000 tons per month and the demand amounts to 400,000 to 425,000 tons per month.

In an effort to relieve this situation and to insure the receipt of steel by the shipyards, the Commission, cooperating with the War Production Board, has endeavored through changes in the specifications to convert an appreciable portion of its tonnage so that it will fall within strip mill limitations. In this connection, the Commission upon advice from the War Production Board, issued a memorandum on November 11 to all shipyards recommending that the changes suggested by the War Production Board be made on all mill sheets.

The Commission was again approached during December with a request that further changes be made so as to bring more of the tonnage within strip mill limitations, and, on January 3, instructions were issued to all shipbuilders directing them to modify their mill sheets on present and future orders in accordance with these further recommendations of the War Production Board.

Those instructions reduce the number of gages formerly used from 85 to 27. They reduce also the number of lengths and widths specified and provide further for universal and strip mill edges instead of sheared plates.

At the present time, the Commission

is studying the effect of the use of plates 90 inches and below on our production, and this is expected to relieve further the critical situation which resulted in the latter months of 1941 in the delivery of only approximately 50 per cent of the merchant shipbuilders' requirements. Our aim is to do everything we can through modification of our specifications to expedite production and eliminate as many equipment change-overs as possible in the steel mills' operation.

The Commission is desirous of cooperating in every possible way to assist the steel industry in meeting this problem which has been placed upon it. However, it must be borne in mind that these changes in production plans can reach a limit, beyond which the changes will not permit the construction of any additional ships, but merely transfer the "bottle neck" from the steel mills to the shipyards. It appears now that we are closely approaching that limit.

I feel certain that a closer understanding, together with the magnificent spirit that all of American industry is showing in our all-out war effort, will result not only in the full accomplishment of our production schedules but contribute vitally to final victory for our armed forces over the aggressor nation.

Extract from an address before the Iron, Steel, and Allied Industries, Hotel Del Monte, California, February 13, 1942.

Welding vs. Riveting

(Continued from page 47)

flat bar to make a perfect welding job and causes less shrinkage.

There are cases where it is not necessary to maintain the full depth of the stiffener, such as where the space between the inner and outer walls is not required for enclosing equipment, or it is desirable to increase the usable size of the room by making the wall thinner.

However, two of the requirements must be adhered to:

1. The strength of the stiffener as a beam, and
2. Its load-carrying capacity as a column.

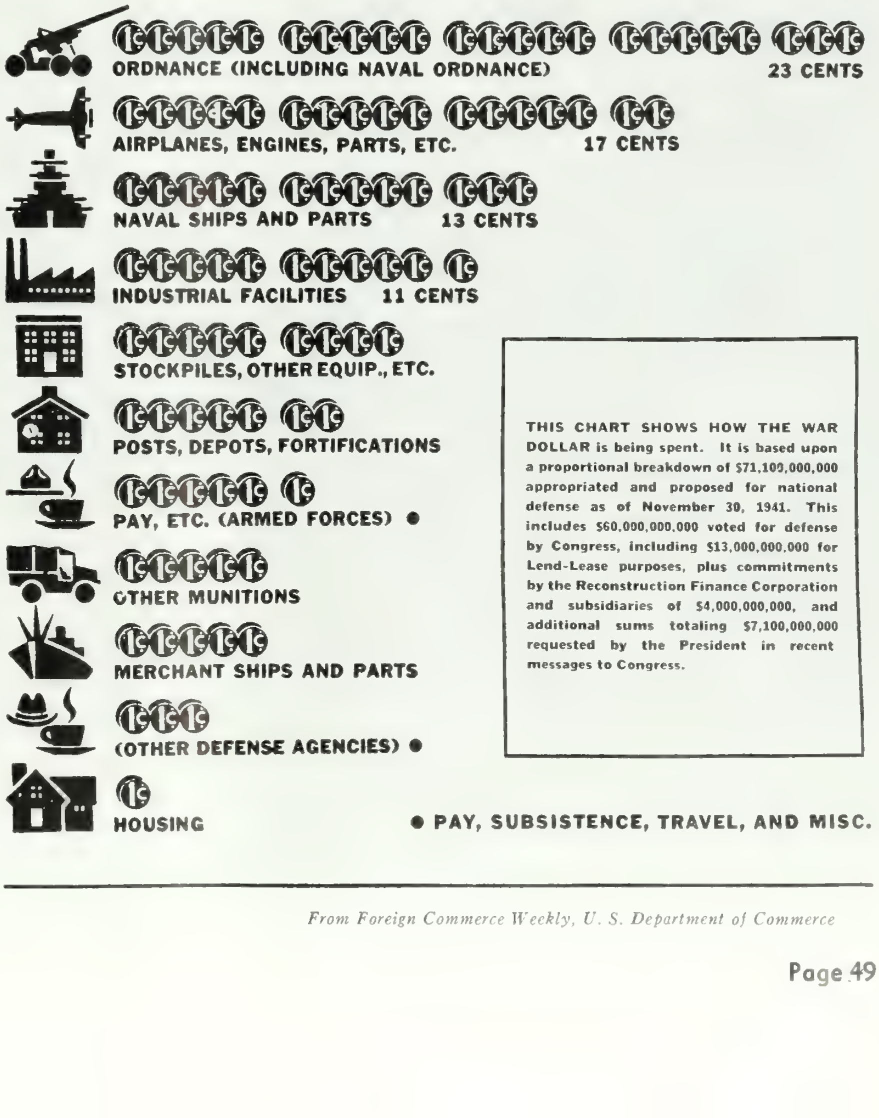
In the case of a deck beam of a ship, for example, not only must the beam carry the load as a beam, but, when the ship twists, there is an end thrust on the beam due to the shortening effect of the distortion. The familiar example is the case of the ship that due to injury has been badly twisted. The deck is usually buckled in the form of an "S," one side of the center being above and the other below the original position before the deformation. In other words, when the ship twists, the beams are displaced from their normal position at 90 degrees to the center line. The deck plate that is attached to the beam and the side of the ship tends to hold the beam in its position at 90 degrees to the center line and in so doing pulls on the obtuse angle side and buckles on the acute angle side.

As an example of the use of a smaller stiffener assume the toe of the long flange of a 3″ x 2½″ x ¼″ angle is welded to the plate (Fig. 5). We can assume the "center sill section" composed of the angle welded to a strip of plating 5″ x $\frac{5}{16}$″, which will bring the neutral axis very close to the 40-60 per cent point mentioned before. The area is 2.8751 square inches—neutral axis 2.1311″ from the unattached flange—1.1814″ from the back of the plate. The moment of inertia of the section is 4.7825 (inches)^4, and the section modulus 2.4441 (inches)^3 and $(r) = 1.289$ inches.

The weight of the 3″ x 2½″ x ¼″ angle is 4.5 pounds per foot as compared with 7.2 pounds for the 4″ x 3″ x $\frac{5}{16}$″ riveted angle and 5.75 pounds for the angle cut from the 8″ structural channel. The wall has a 3″ instead of a 4″ air space and the interior measurement of the room is 1″ greater toward each wall. All considerations of strength are equal or greater than the 4″ x 3″ x $\frac{5}{16}$″ riveted angle.

The moment of inertia calculation shown on the drawing has been simplified by resolving the figure into rectangles where "I" is found by dividing (bh^3) by 12 or 3, depending on the location of the axis. In the case of the triangle, it is (bh^3) divided by 36.

HOW WE ARE SPENDING

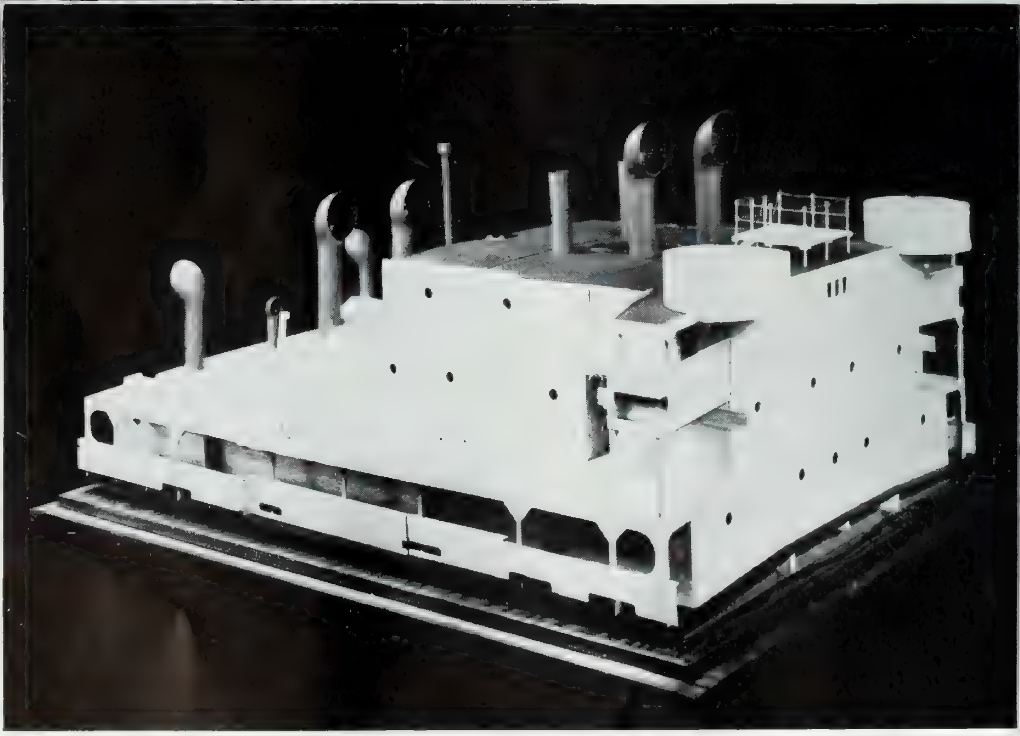


THIS CHART SHOWS HOW THE WAR DOLLAR is being spent. It is based upon a proportional breakdown of $71,100,000,000 appropriated and proposed for national defense as of November 30, 1941. This includes $60,000,000,000 voted for defense by Congress, including $13,000,000,000 for Lend-Lease purposes, plus commitments by the Reconstruction Finance Corporation and subsidiaries of $4,000,000,000, and additional sums totaling $7,100,000,000 requested by the President in recent messages to Congress.

From Foreign Commerce Weekly, U. S. Department of Commerce

WOMEN MODEL MAKERS AID PREASSEMBLY OF HULLS

IN SHIPBUILDING, as in many another vital war industry, the talents of American women are aiding Uncle Sam's drive against the Axis. Ann Herbolic, left, and Julian Mesic, two gifted members of the frail sex, built these wooden scale models to test some new developments in the technique of prefabricating ships in huge units. Delivered at the rate of one a day—and soon by twos and threes—American-built Liberty ships assembled in this fashion are speeding tanks, planes, guns and supplies to the Allies. At the Richmond Shipbuilding Corporation's yard in Richmond, Calif., where these two women are employed, scores of Liberty ships are being mass-produced for the Maritime Commission's new 18,000,000-ton "Victory Fleet."



THIS SCALE MODEL of a Liberty ship's deck house in four sections was built by Miss Mesic and Miss Herbolic. It demonstrates prefabrication of a whole deck house structure, completely equipped with piping, electrical work, carpentry, etc. After being transferred to the shipways on giant trailers, the sections are welded into place as a single unit.

News FROM THE PACIFIC NORTHWEST

by Daniel L. Pratt

Government To Expand Drydock Facilities

Most important of recent shipbuilding developments on Puget Sound is the acquisition by the Government, of eleven acres of land on Harbor Island, lower Seattle harbor, announced March 18, for the purpose of creating a great expansion in the drydocking facilities of the Todd-Seattle Drydock Co. This yard, one of the largest of its kind in the country, has carried on a tremendous business during the past three years in repairs and conversions. It is located a short distance from the Seattle-Tacoma Shipbuilding Corp., in which the Todds are also interested, but does no new construction work. While many of the details of the expansion program are withheld, it is stated that additional shipyard facilities will include two new drydocks for repair, alteration and conversion of Army, Navy, Coast Guard and repair vessels that will be added at an additional cost of nearly six million dollars, not including the cost of the site. It is understood that the land will continue to be owned by the Navy but that the facilities will be operated by the Todds in connection with their already large plant, which has been taxed to capacity with Government conversions and repair work, as well as Russian, Alaskan and other commercial freighters.

Two Destroyers Launched

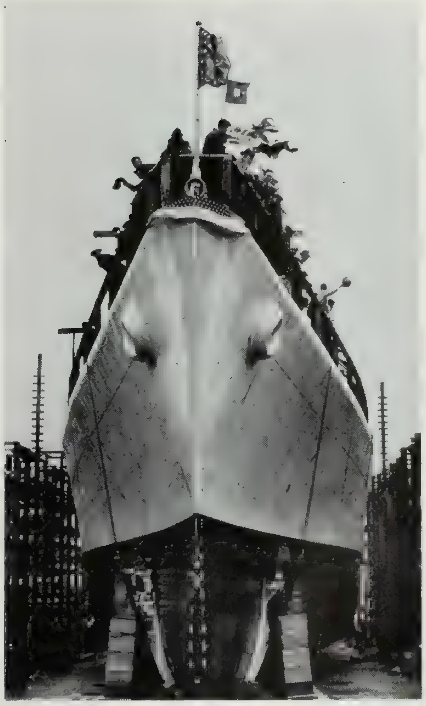
Seattle yards have really been going to town on launchings the past month, as have other shipbuilding institutions on Puget Sound. Most important of these events, of course, were the launchings of the two first destroyers from the Seattle-Tacoma Shipbuilding plant No. 2, and the announcement that eight more of these boats were in a state of partial completion and that from now on a steady flow of the vessels, so badly needed by the Navy, would come from their ways. Another 1700-tonner will come from the ways in about thirty days, and from then on, it is expected that the vessels will be launched at the rate of one a week. The plant has a contract for 25 destroyers, to cost about $182,000,000. Two of the first class are now in the water, the others will rapidly follow, and work is already under way on the 2100-ton fleet. In fact, the Carmick, launched March 8, was not in the water fifteen minutes before the keel was laid for the U. S. S. Fletcher, first of the 2100-ton class, on the same ways, and another keel was laid on the ways of the 1700-ton Doyle, which went into the water on St. Patrick's Day. Keel for the Carmick was laid in May.

Seaplane Tender Takes Water

On the same day, March 8, as the launching of the Carmick at the Seattle-Tacoma yards, another interesting event took place at the yards of the Lake Washington Shipbuilding Co. at Houghton. This was the launching of the Absecon, the first of the six seaplane tenders under construction at the Lake Washington yard, each representing an investment of $4,500,000. Sponsor was Mrs. R. L. Moore, Jr., wife of a commander in the Navy, and daughter of Capt. Guy Davis, Chief of Staff of the Thirteenth Naval District. All ships of this type are named after bays or inlets. There are both an Absecon Bay and an inlet of that name on the Jersey coast. The launching of the Absecon was the answer to a large sign on one of the buildings in the Lake Washington yard, which reads: "Pearl Harbor bombed. Wake Island and

DESTROYER CARMICK hits water at Seattle

HULL OF CARMICK is hardly off ways before new keel is laid at Plant No. 2, Seattle-Tacoma Shipbuilding Corporation.



Guam captured. Philippines under attack. What are you fellows going to do about it?" As a matter of fact, however, the Lake Washington yard, one of the first to go into action, has a fine list of vessels to its credit already.

Mine Sweeper For British Navy

Another vessel launched in Seattle on St. Patrick's Day was a mine sweeper intended for the British Navy. She is the BYMS9 and came from the ways of the Lake Union plant of the Associated Shipbuilders. She is a 136-foot wooden craft. She was christened by Miss Corinne Mansker, daughter of Acme Mansker, foreman of the yard. The mine sweeper was allocated to Great Britain under the defense pool agreement.

Suit Ties Up Dutch Ship

After coming unscathed through the war-infested waters of the Pacific, the Dutch freighter Wilhelmina found herself upon her arrival in Seattle involved in a sea of litigation. A suit filed in Superior Court sought to prevent the ship's departure until a $42,000 loan is repaid to Mrs. Raya Kuehne, one of the owners of the vessel, who claims to have made a loan on her several years ago. This is the ship which attracted world-wide attention when it was revealed on her arrival in Seattle that her crew had brought her all the way across the Pacific with a valuable cargo of coal in spite of the Japanese efforts to intercept her. With the existing need for vessels of this type, it is not likely that she will be permitted to be kept out of commission for long on account of the small sum involved in the suit.

Contract For Eight More Mine Sweepers

One of the largest shipbuilding contracts given out by the Government on Puget Sound recently was that awarded to the Winslow Marine Railway & Shipbuilding Co., Bainbridge Island. This yard, already greatly expanded for its present contract for four mine sweepers, has been given an order for eight more, a contract which involves about $16,000,000. The vessels are steel and are 220 feet long. Construction is well under way on the first two of the original contract. The yard already employs 700 men, working three shifts.

Another Kaiser Yard For Portland

Edward Kaiser of Portland has been authorized to construct another yard at Portland with ten ways and given another contract for 22 Liberty vessels. It will be an assembly plant similar to the Oregon Shipbuilding Co. and the Kaiser Company's plant now under construction at Vancouver; will employ about 20,000 men at the peak of operation; and will be located on Swan Island.

More Seaplane Tenders

At the Lake Washington shipyards, more seaplane tenders are expected to be launched in quick succession following the launching of the Absecon on March 17. Two sister ships are nearing completion on the ways next to the one where the new ship was built and two more keels have been laid. Four of the same type are being turned out at Associated Shipbuilders and more at the Puget Sound Navy Yard.

War Shipping Administration

Pacific Northwest offices of the War Shipping Administration, which was recently formed to take charge of the allocation of all merchant vessels, terminals and other offshore commercial transportation facilities, have been opened in the Dexter-Horton Building at Seattle, in charge of A. B. Lintner, vice president and general manager of the American Mail Line, who was recently appointed Northwest representative of this new division of the Maritime Commission. Lintner will retain general supervision of the American Mail Line, but as all of this company's ships as well as the entire shipping fleets of the country are now operated by the new Division of Emergency Shipping, as it is called, Lintner will naturally for a while make this his primary activity. Lintner was district director of the United States Shipping Board with headquarters in Seattle during World War I.

Saxonia Again To Sail

Under a new name, the steamship Savannah, formerly the German freighter Saxonia, now at the Lake Washington Shipyards, Seattle, undergoing conversion, is expected to be ready for sea by April 15. Her last service was as the mother ship of the 5th division of the submarine flotilla on the Atlantic. Dulien Steamship Co. of Seattle, present owners, are spending $400,000 on her to make her a freighter with 7000 measurement tons of cargo. As a Kosmos liner, she was the first ship to be seized by the United States after war was declared against Germany in 1917.

Repair Dock To Handle Five Ships

The Commercial Iron Works at this writing has called for bids (within a week) on a repair and conversion dock at Portland which will be able to accommodate five ships at once. The site selected is near the company's present drydock. The new dock is to be finished by June. Port of Portland Commission has agreed to requested deepening of the river channel.

Fire Destroys Valuable Fishing Equipment

Far-reaching damage that may seriously affect the efficiency of the Alaska fishing and canning industry for this season and several seasons to come was effected by a great fire which last month wiped out the fishing gear and nets of about fifty boats at the Port of Seattle's fishing terminals, Salmon Bay. Not only is the loss great to the owners, but the material destroyed is almost irreplaceable at this time. Web for the manufacture of purse-seines, cordage, rope, cork floats, etc., are practically unobtainable on the Seattle waterfront and this scarcity is likely to increase. The fire came at a time that the fishermen were just about ready to start their spring outfitting.

Marine Shorts

Puget Sound women will soon be helping their fathers and brothers building and repairing ships at the Puget Sound Navy Yard at Bremerton, as, for the first time, women will be admitted to ratings and classifications previously barred to them, and they will be paid while they become proficient in their jobs. A call for a thousand women went out from the office of **Admiral C. S. Freeman** of the Thirteenth District.

* * *

Allocation of $20,000 for a survey of Hell's Canyon on the Fraser River insures that the **International Sockeye Salmon Commission** will be able to make progress with their project to make this canyon passable to the hordes of the valuable red salmon that formerly surged up the Fraser River on their way to the spawning grounds and formed a basis for a $15,000,000-a-year fishing industry that no longer exists. Other varieties of salmon still run through Puget Sound, but the big "Fourth Year" run of Sockeyes was cut off many years ago when railroad workers on the Fraser set off a blast that filled this canyon with rock, effectively shutting off the fish from the spawning grounds at the headwaters. It is believed that if even part of this barrier could be removed, the speed of the current could be reduced enough that with the use of fish ladders, the Sockeyes could get through, and this valuable branch of the salmon fisheries restored both for Puget Sound and British Columbia.

* * *

YMS-126, a 135-foot wooden mine sweeper, was launched from the yards of the **Martinac Shipbuilding Corporation** in Tacoma, March 7. She was christened by **Miss Marie Ultsich,** daughter of T. Ultsich, mechanical superintendent of the yard. This vessel is the fifth of her type to be built at Tacoma. On the same day a sister ship, the YMS-131, was launched from the yards of the **Tacoma Boatbuilding Co.** She was christened by **Miss Marjorie Leed** of Tacoma.

Marine Short-Shorts

Another Navy subchaser, the **U.S.S. Adept,** was launched by the Commercial Iron Works of Portland March 12. . . . Twenty-three private yachts have been loaned to the Government by Pacific Northwest yachtsmen, according to **Commander N. S. Haugen** of the Coast Guard. . . . The **Merchants Exchange** at Seattle has moved to new quarters in the 814 Second Avenue Building. . . . **The Navy** has taken over the second and third floors of the Exchange Building, where the Merchants Exchange was located, crowded the Interior Department offices out of the Federal Building, and is planning a new administration building at Smith Cove.

Personal Gleanings

Mrs. J. R. Tate, wife of Commander Tate of the Naval Air Service, christened the C-3 Maritime Commission vessel launched at the Seattle-Tacoma shipyard at Tacoma the middle of March. This was the eleventh boat this yard has put in the water. . . . **L. L. Bates,** veteran Seattle shipping man, has been placed at the head of the traffic department for the Washington Cooperative Egg and Poultry Association, a very large concern with big traffic problems of its own. . . . **C. A. Sutherland,** foreman of the Todd Drydock pipe-fitting department, has been granted a leave of absence for three months in recognition of 26 years of service with the Todd Shipyards. . . . Friends of **Russell R. Waesche,** head of the United States Coast Guard, were glad to hear of his promotion from the rank of Rear Admiral to Vice Admiral. Admiral Waesche was stationed for many years on the Coast, commanding among other vessels the revenue cutter Snohomish, and he has hosts of friends out here who will rejoice over his promotion. . . . **L. W. Baker,** general manager of the Alaska Steamship Co., gave some very interesting testimony before the Maritime Commission late in February on the factors that are causing the increasing costs of transportation to Alaska. . . . **William H. Sullivan,** Pacific Coast steam specialist for Westinghouse, with headquarters in San Francisco, was the principal speaker at a dinner of the Western Washington section of Mechanical Engineers recently. . . . **Commander Frederick C. Hingsburg,** chief of staff of the Seattle District Coast Guard, has been promoted to senior Coast Guard officer of the Northwestern section, now a part of the 13th Naval District. He succeeds **Captain W. H. Munter,** who has been appointed coordinator of the captains of the ports for the 13th Naval District.

U. S. S. CARMICK AND PART OF CROWD AT HER LAUNCHING

News FROM THE PACIFIC SOUTHWEST

by K. M. Walker

Los Angeles County Shipbuilding Center

Six hundred millions of dollars is the approximate total in shipbuilding contracts allotted to Los Angeles County shipyards, and to yard construction and expansion, since our defense shipbuilding program started.

Firms engaged in this vital work include Consolidated Steel Corp., California Shipbuilding Corp., Los Angeles Shipbuilding and Dry Dock Corp., Bethlehem Shipbuilding Company, Harbor Boat Building Company, Western Pipe & Steel Company, Fellows & Stewart, and Al Larsen Boat Shop.

In addition to the larger shipbuilding firms, there is considerable activity by a number of smaller firms building smaller boats. These swift fighting craft, only 75 to 100 feet long, will form, nevertheless, an important part of our sea fighting forces.

A very important angle is the distribution of pay roll money, which normally finds its way rather quickly into trade channels in exchange for both consumer goods and for the more durable items. Thus, the benefits are spread to many and varied manufacturers and distributors, as a major part of a ship within the yard itself is labor pay roll.

Shipbuilding, in addition to its immediate defense importance, means a vast sales opportunity, which is widely spread. For example, there are more than 50 other types of local manufacturers and suppliers who produce or sell materials, parts and services for the ships, large and small.

As of March 20, the California Shipbuilding Corporation had laid the keel for its 30th vessel and had launched its 16th hull, the first keel having been laid late in 1941.

Concrete Shipyard Busy

The new plant of the Concrete Ship Constructors, located on San Diego Bay at the foot of Fifteenth Street in National City, is rapidly nearing completion, and construction of the first two of the five concrete oil barges for the Maritime Commission is about to begin. The shipyard has its inception in the loft of the old City Hall building at 14th and Harding Avenue, National City, and here the designs of the vessels were worked out and the large amount of engineering necessary to their original design was concluded. Meanwhile the shipyard site, located about a mile away from the original office, was being graded, the numerous shop and office buildings erected, and the site fenced. The executive offices have been moved to the new shipyard property, but the drawing office remains in the old City Hall loft.

Two 500-foot graving docks, arranged side by side, are being scooped out of the sand and will have sheet piling retaining walls all around. The ships will be built in these graving docks, and the launching will consist simply of removing the sheet piling on the seaward side and letting the dock fill. Between the graving docks will be a narrow fill, and a traveling crane will move on tracks lengthwise of the docks on the top of the dividing wall. This is a revolving crane and will service both the building docks. Two ships will be built at a time, and pouring of the first concrete is scheduled for late April. It is planned to complete the five vessels within a year after pouring of the concrete commences. The full time of construction from the time the first steel reinforcing is placed to launching is expected to take approximately 140 days.

A full size scrieve board has been laid out on the sand in the new yard and hull lines laid down and faired up. Hull molds are being completed and the end sections of the molds erected on the scrieve board before being taken down and erected in the graving dock.

Design of Concrete Barges

These ships will be oil tank barges without power, 370 feet long and 56 feet in beam, and will weigh about 5000 tons when completed. The entire construction will be reinforced concrete, including decks, bulkheads, deck erections and houses with a cast steel stern frame to carry the rudder. Some 2000 yards of concrete and 1240 tons of reinforcing steel will enter into the construction of each ship, and many tests of concrete have been made to arrive at the most suitable composition. It has been decided to avoid the use of ordinary crushed stone aggregates and to use a mixture of Portland cement, Haydite aggregate, and Haydite sand. Haydite is a shale obtained from pits near San Rafael, California, and is put through a treatment utilizing heat and fusion to produce a material of a light, porous nature with a hard fused surface. The resulting concrete is therefore much lighter than that used commonly for building and road construction. Every pound saved in the construction of the hulls will naturally result in a pound more pay load. The total loaded displacement of the vessels will be about 13,000 tons of which about 8000 tons will be cargo.

As a result of thorough engineering and tests made on full-size experimental hull sections, the concepts of the concrete ship as built in the past have been considerably upset, and these ships will be a marked improvement over anything of the kind produced in the past. In the January, 1942, issue, we commented on the comparative carrying capacity of steel, wooden and concrete ships and included a statement that steel will comprise about 60 per cent of the hull weight. These figures were based on concrete ship designs of the past and applied particularly to the construction of the Cuyamaca and San Pasqual, concrete steamships built in National City during the past war. With the improvement in concrete formulas, and the vast amount of original engineering done by the Concrete Ship Constructors, and which had not been completed when the January issue was printed, the figures then quoted have been greatly improved upon. The previously quoted figures drew the attention of Mr. J. Vasta, of the U. S. Maritime Commission, Washington, D. C., who advised that the amount of reinforcing steel in the new designs will comprise approximately 30 per cent of the hull weight instead of the 60 per cent reported in the January issue. It now appears that the weight of reinforcing steel will be nearer 25 per cent of the total hull weight. This is a remarkable saving in this material, and, when these ships have demonstrated their success at sea, will definitely enhance the value of the concrete ship. Electric welding also plays a valuable part in reaching this low proportion of steel as systematic welding of reinforcing intersections produces a very rigid frame work and permits considerable reduction in the amount of steel used. The new design calls for a shell thickness of four and a half inches, containing one transverse layer of 1¼″ steel bars, and two layers of ¾″ bars laid horizontally and staggered on each side of the transverse bars.

War Cargo Curb Affects Stevedores

Stevedores in the coastal ports are feeling the curb on incoming cargoes arising from the practical stoppage of coastwise and intercoastal shipping due to the war conditions. The average monthly wage of stevedores in the Southern California ports has been about $200 monthly in normal times, but with the drastic war curb on shipping has dropped to about $50 monthly. This drop in income has caused most of these men to seek employment elsewhere. Many have joined up in some type of service, mostly naval, and others have found more gainful employment in the aircraft industry or other lines of endeavor. In the course of the next few months, it will probably be difficult to assemble the necessary gangs to handle cargo.

CAPTAIN A. B. COURT, executive vice president of Los Angeles Shipbuilding Corporation, and shipfitter Robert Tillie discuss U. S. Offense Bonds' sales drive.

Courtesy "Calship Log"

Yard Notes

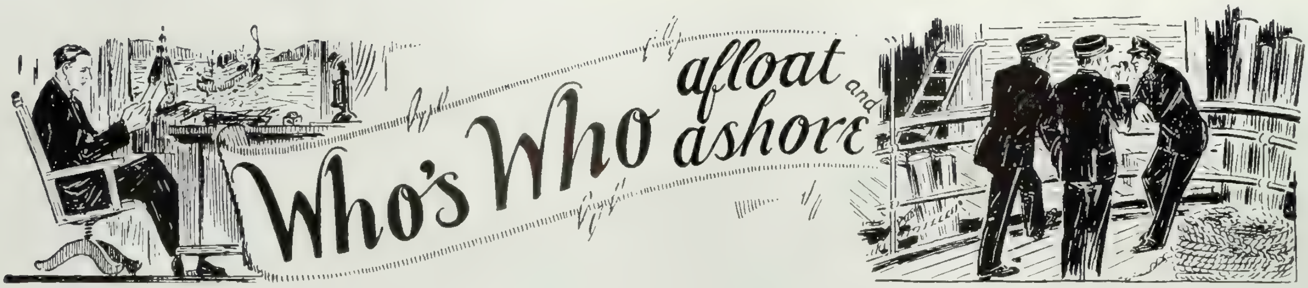
A delayed christening of the new $250,000 tuna clipper Queen Amelia took place at the Campbell Machine Company, San Diego, on Sunday, March 15, with nine-year-old Miss Alvera Tavares as sponsor. This vessel was put in the water some weeks ago, and construction was completed while afloat. There was no ceremony on this first launching, but the finished vessel was hauled out for final bottom painting, and, when this work was completed, the actual christening was observed.

The Queen Amelia registers 268 net tons, is 101 feet length overall with a beam of 26 feet.

The old Martinolich Shipyard has been completely reorganized and restaffed and in the future will operate as the Lynch Shipbuilding Company, a subsidiary of the Benson Lumber Company, San Diego. The officers are Frank C. Lynch, president; Gerald C. Thomas, vice president; H. H. Hallett, treasurer; C. H. Woodward, manager; and Paul Blackwell, superintendent. This yard recently completed the 103-foot tuna clipper St. Ann, now on her maiden voyage.

On March 7, the Hubbard South Coast Company of Newport Beach launched the Naval mine sweeper YMS-91 and received the coveted naval "E" flag for efficiency.

On Friday, the Thirteenth of February, the San Diego Marine Construction Company hurled defiance in the teeth of fate by launching the Naval mine sweeper YMS-113.



Who's Who afloat and ashore

Edited by *Jerry E. Scanlon*

MAJOR HARRY E. HORNUNG, U.S.A.

From N. Y. K. To U. S. A.

With the rank of Major U. S. A., **Harry E. Hornung,** for more than twenty-three years associated with the Nippon Yusen Kaisha Line, said farewell to his California relatives and friends as he embarked "for destination unknown."

Major Hornung's work will be with the handling of freight, a post for which few men are better qualified. His long career with the NYK in New York, Seattle and San Francisco, and his travels in this association to transpacific, Central and South American ports, gave him an experience and knowledge that will be of inestimable value to the United States.

Shipping officials regard Major Hornung as outstanding in his field. When war was declared by the United States, Mr. Hornung held the title of general freight agent for NYK. He is one of the ablest transpacific freight executives in the country, and his knowledge of the Far East will serve him well in his highly important post.

His quiet demeanor, refreshing personality won for Major Hornung in his business and private life a host of friends and acquaintances on the Pacific Coast during the ten years he was located in the San Francisco and Seattle offices.

U.S.M.C. Decentralizes Shipbuilding Control

Admiral Howard L. Vickery, vice chairman of the Maritime Commission, on March 20 announced a voluntary decentralization move of some of the Commission's personnel in order to facilitate the vastly increased program of construction and delivery of merchant ships in the United Nations' war effort. He stated that four complete regional offices, responsible for construction of merchant vessels, will be established in San Francisco, New Orleans, Chicago and Baltimore. These points were selected because of their central location in the shipbuilding areas of the country.

The personnel of these new offices will consist of employees of the Construction Division and the Plan Approval Section of the Technical Division, together with part of the Audit Control Section of the Finance Division.

Approximately 200 Washington employees will be asked to move starting April 1. Each of the four regional offices will be complete, with approximately 400 employees. The larger part of these will be made up from Maritime Commission field representatives already working at the various shipbuilding yards. The move was made necessary by the greatly increased shipbuilding program of the Commission.

C. W. FLESHER, U.S.M.C.

The West Coast area, with offices in San Francisco, will be under the direction of **Carl W. Flesher,** now Acting Director of the Construction Division. The Gulf Coast area, with headquarters in New Orleans, will be under **Mr. L. R. Sanford,** at present Chief of the Inspection Section. The East Coast, with offices at Baltimore, will be directed by **Mr. J. F. McInnis,** Chief of the Hull Plan Approval Section. The Great Lakes area, with offices in Chi-

L. R. SANFORD, U.S.M.C.

cago, will be under the direction of **W. E. Spofford,** who for the past two years has been with the Consolidated Shipbuilding Corporation.

In announcing the decentralization plan, Admiral Vickery stated that in view of our war effort, there would be no release of personnel to other agencies and that all employees were expected to remain with the Commission. The personnel to be moved have already been selected, and arrangements have been completed between Admiral Vickery and the newly appointed regional directors.

Harris New President United States Lines

BASIL HARRIS
Newly-elected president of U. S. Lines
(Blackstone Studios)

Basil Harris, executive vice president of the United States Lines Company, was elected president of the shipping company on March 17 at a meeting of the board of directors held at One Broadway. Mr. Harris succeeds John M. Franklin, president of the company since 1936, who has been commissioned a colonel in the U. S. Army Transport Service and is stationed at Washington, D. C. In his new post, Mr. Harris heads an organization that was the leading company operating American flag pasesnger and freight vessels in the North Atlantic until the Neutrality Act barred American ships from those waters. The company is now playing an important role in the war by operating many freight ships in vital trade routes supplying our armed forces.

Mr. Harris's shipping career began shortly after his graduation from Princeton in 1912 when he joined the firm of Norton, Lilly & Company in New York. Later, in partnership with Kermit Roosevelt and John M. Franklin, he founded the Roosevelt Steamship Company, which is now a part of the United States Lines organization. For the past ten years, he has been a leader in the development of the American merchant marine and with his associates strongly supported the "two fisted, hard hitting policies" inaugurated by the Maritime Commission under President Roosevelt.

In September, 1939, Mr. Harris was asked by Secretary of the Treasury Henry Morgenthau to accept the newly created post of Assistant Secretary of the Treasury and Commissioner of Customs, to establish new methods of handling shipping and customs problems arising out of the European war situation. He remained in this post till July, 1940, when he resigned to return to the United States Lines as executive vice president.

A. J. McCarthy On Board U. S. Lines

A. J. McCARTHY
New Director of U. S. Lines

At a special meeting of the board of directors of the United States Lines Company, A. J. McCarthy, vice president of the company, was elected a director. He was also elected a director of the International Mercantile Marine Company, parent organization.

Mr. McCarthy joined the organization forty-three years ago and has since become one of the outstanding shipping men in America. As vice president in charge of operations his duties have included the supervision of all the ships and terminals of the company's services including the United States Lines, the Panama Pacific Line, the American Pioneer Line.

During World War I, Mr. McCarthy performed notable service as a representative of the company attached to a special board of the United States Navy engaged in the purchasing and outfitting of vessels for war activities. During the present war he is responsible for the operation of the company's many freight ships in vital trade routes supplying the nation's armed forces.

Navy Censors Names and Types

Further safeguards to keep information from the enemy is the recent announcement from **Secretary of the Navy Knox** that in the future the Navy will not announce the names or types of merchant ships sunk by Axis sea raiders.

Henceforth, as a general rule, Secretary Knox said, vessels falling prey of the enemy in Western Hemisphere waters will be identified only as "large, medium and small." Until the latest ruling, the Navy had been disclosing the nationality, tonnage and type of most ships attacked.

This latest decree extends to publishing any names of vessels even when the press interviews survivors.

W. S. A. Adjuster

Alfred "Al" Young has been granted leave of absence from his post with the Fireman's Fund Insurance Company to act as WSA compensation adjuster in the San Francisco district on small boat requisitionings. He is located in the WSA offices at 200 Bush Street. Mr. Young is known up and down the Pacific Coast for his long association with the Fireman's Fund as an adjuster.

CAPTAIN THOMAS MACKLIN

"All-Out" For Victory

Captain Thomas Macklin, master mariner and retired lieutenant of the U. S. Navy, has been recalled to the colors. Macklin, known to hundreds of seafarers along the Pacific Coast, has been making his home in San Francisco, after a distinguished record of thirty years naval service.

He is widely known for his proficiency as a modeler of ships famed in the sailing era.

Captain Macklin started to sea as a deck boy with the Ward Line and, with the outbreak of the Spanish-American War, joined the Navy. During World War I, he was commissioned and commanded numerous vessels in the Atlantic.

With the Armistice, Captain Macklin served as a deck officer on different cargo vessels and tankers. He is author of a book on navigation, covering Alaskan waters, which was published by the U. S. Naval Institute.

For the present, Captain Macklin is stationed in the San Francisco Bay area under **Admiral Osterhaus.**

In the wake of the leadership of **Vice President Thomas G. Plant,** now Lieutenant Colonel of the Army Transport Service, a total of six other executives of the American-Hawaiian in Pacific Coast offices have joined the same branch.

They are: **W. E. Dooling,** assistant traffic manager in San Francisco, now Captain Dooling; **Leonard Formosa** and **W. W. Wiggins,** district freight agents, also with the ranks of captain; **J. A. Hazelwood** of the Portland office, now a lieutenant-colonel; **C. F. Macintyre** of the Seattle office, a lieutenant colonel; and **C. Craig,** also of the Seattle office, with the rank of major.

Lieutenant Colonel Plant is now on overseas duty after being in the East.

W. S. A. Drafts Section Heads

Chalmers Graham, senior partner in the law firm of Graham & Morse, San Francisco, heads the Admiralty Section of the War Shipping Administration, of which **William Radner,** secretary of the Matson Navigation Company, who is on loan to the Government, is general counsel, and **John E. Cushing,** president of the American-Hawaiian, is chief on the Pacific Coast.

CHALMERS GRAHAM

It will be Graham's duties to handle and be responsible for all claims and litigation, including matters concerning collisions, salvage, general and particular average claims of various sorts and proceedings in connection with requisitioning.

Other duties of the Admiralty Section will have to do with consultation on the drafting of charter forms and a uniform bill of lading.

Another important unit of WSA is the section of Purchase and Maintenance and Repairs. This section has the responsibility for handling of contracts relating to purchase, maintenance, repairs, terminals and stevedoring and is in charge of **Wade H. Skinner.**

Arthur M. Becker heads the Requisition, Valuation and Miscellaneous Section. He is in charge of all requisitioning and all questions concerning valuations, accounting, rates, forwarding and lend-lease.

Grace Line Notes

E. T. Senter, marine superintendent for the Grace Line, announces the following changes in seagoing personnel:

Alexander I. McGilvray, third assistant engineer on the Flying Cloud, under the company's service, but now by Government operation has been assigned second assistant on the West Modus.

Captain Patrick H. Gallagher, who has been shore-side for nearly a year supervising loading and discharge at Pacific Coast ports, has gone back to sea as chief officer on the Pacific Oak.

Arscott C. Venton, second assistant engineer on the West Modus is shore-side for a vacation.

James B. Tiffany, Jr., engine cadet on the Siletz, has left the vessel under orders of Captain M. E. Crossman,

FRED L. DOELKER
Vice President Grace Lines

District Instructor for the Maritime Commission, awaiting orders.

Deck Cadet William C. Yates was transferred from the Siletz to the West Celeron.

Fred L. Doelker, vice president of Grace Lines, was successful in negotiating a 13 per cent war surcharge on behalf of Latin-American shipping lines, during his recent trip to Washington.

His visit was to confer with **R. Ranney Adams,** executive vice president of the Grace Line in New York, concerning allocation of ships for the coffee trade from Latin-American ports to the Pacific Coast, as well as a schedule of ships for this service, which is regarded as one of the highly essential routes of American commerce.

M. G. GAMBLE

Recently appointed an assistant general manager, Marine Department, Standard Oil of N. J.

Development Expert Picked By Army Ordnance

French E. Dennison, in charge of the Small Commercial Refrigeration Development Department of the York Ice Machinery Corporation, has been called by the War Department to serve as chief inspector for the Philadelphia Ordnance District.

During World War I, Mr. Dennison served with the Ordnance Department at Rock Island Arsenal—the first refrigerating engineer in Ordnance—and engineered the general refrigeration, water-cooling and air-conditioning systems at Rock Island.

His experience in precision manufacturing, particularly in the production of York commercial refrigeration equipment, makes him invaluable to the Ordnance Department—which is reaching out into industry for key men whose experience is vitally needed in our vast armament program.

Worthington Appoints J. T. Wright

The appointment of Joseph T. Wright as manager of the Compressor and Tool Division at its Holyoke, Massachusetts, Works was announced March 16 by Worthington Pump and Machinery Corporation.

Mr. Wright has had a broad experience in the machinery field. He served as assistant works manager of Lodge and Shipley Machine Tool Company during World War I, subsequently organized J. T. Wright Company of Cincinnati for the manufacture of paper-drilling machines and other special equipment. This organization subsequently merged with Harris-Seybold-Potter Company, Dayton, Ohio, with which organization Mr. Wright served in several responsible capacities.

For the Duration

Now it's "Grandpa" **Francis "Frank" Allen,** and the title is being proudly worn by the assistant traffic manager of the American-Hawaiian Steamship Company.

The grandchild is **Elizabeth Sharon Stevens,** daughter of Mr. and Mrs. Samuels Stevens.

Westfal-Larsen To Atlantic

Ray Winquist, vice president of the General Steamship Corporation, is in Washington in connection with the new operations of the Westfal-Larsen Line, for which his company are the agents on the Pacific Coast.

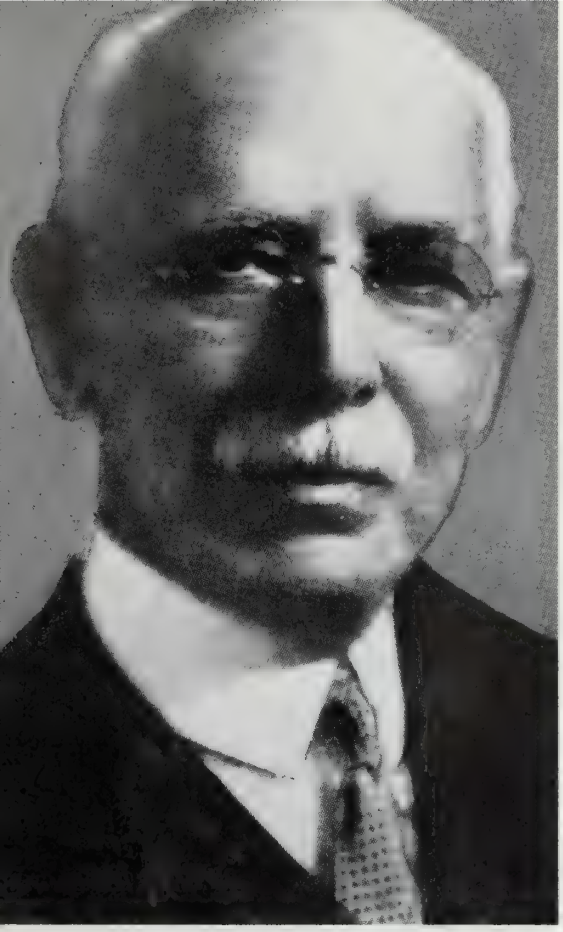
Hereafter and until there is a shift in the war, Westfal-Larsen vessels will operate only in the Atlantic. The company has operated out of Pacific Coast ports to East Coast ports in South America, carrying both passengers and freight.

Federal Appoints Public Relations Chief

L. H. Korndorff, president of the Federal Shipbuilding and Dry Dock Company, U. S. Steel Subsidiary at Kearny, N. J., announced in March the appointment of **Earl O. Ewan** as assistant to the president in charge of public relations.

Mr. Ewan, prior to his entrance into the field of public relations, was a newspaperman of long experience. He was formerly a member of the editorial staff of the New York *Times,* the *Wall Street Journal,* and other New York dailies. He came to his new position from the public relations department of Johns-Manville Corporation, New York.

Necrology



SHIPMASTER ANDREW BAXTER

A Great Shipmaster Passes

Captain Andrew Baxter died at his home, 15 E. 69th Street, New York, on February 4, and the shipping fraternity mourns the loss of a great and famous shipmaster.

Born in Scotland in 1852, he made his first trip to sea at the age of 14 on the iron brig George Ann of Kirkcaldy, Scotland, of which his also famous father, Andrew Baxter, was the master. He signed on the ship's articles at one shilling per month and made the trip to Archangel for flax.

He served for many years as second mate, mate, and master for Thomas Law & Company, Glasgow. His first command in 1880 was the ship Dumbartonshire. In 1884 he supervised the building of Kircudbrightshire, and acted as her master until 1890 when he supervised the building of the Ross-shire, which vessel he commanded until his retirement from the sea in 1900.

As master, he rounded Cape Horn twenty times and the Cape of Good Hope fourteen times. He carried thousands of passengers and immigrants to Australia and New Zealand. His last voyage in 1900 from San Francisco to England was the subject of a book "Round the Horn Before the Mast" by Basil Lubbock.

Retiring from active life at sea, he became Marine Superintendent of Andrew Weir & Co. at New York, which position he held until he retired about 1922. Captain Baxter was associated with many shipping enterprises during his residence in New York, and was a member of the Maritime Exchange since 1910. At the time of his death, he was chairman of the board of the Federal Paint Co., of which his son, Andrew Baxter, is president.

The record of Captain Baxter's long career at sea is remarkable because of freedom from accidents and for fast voyages. His fame as one of the great sailing masters of his period and his skillful handling of ships under his command, navigating the seven seas, will live long after him. His sterling traits of character won for him the admiration and affectionate esteem of not only his fellow shipmasters in the United States and England, but of a host of friends in the shipping community.

Captain Baxter is survived by a son and a daughter.

Worthington Loses Vice President

Edward T. Fishwick, vice president and director of the Worthington Pump and Machinery Corporation, died on March 15 at his home in Glen Ridge, New Jersey.

Mr. Fishwick had been with the Worthington organization for 49 years, having started with the corporation at its Cincinnati works. Mr. Fishwick was senior vice president of the corporation. He was also president and director of the Worthington-Gamon Meter Company of Newark, New Jersey, a director of the Glen Ridge Trust Company; a director of the New Jersey State Chamber of Commerce, and was formerly head of the Diesel Engine Manufacturers Association.

Noted Expert On Charters Dies

Robert F. Hand of Plainfield, N. J., who retired as general manager of marine operations of Standard Oil Company of New Jersey in 1939, died March 5 in Muhlenberg Hospital in Plainfield. He was 58 years old.

Mr. Hand spent his entire career of 37 years with Standard Oil until continued ill health forced his premature retirement. He was recognized as a world authority on shipping and took part in many international conferences on marine matters.

He joined the company as an office boy in 1902, and went to Singapore as local freight manager six years later, the first shipping man to be sent from the New York office to the Far East. He returned in 1911 to become assistant manager of the Marine Department, a post he held until the spring of 1939, when he succeeded the late Robert L. Hague as head of the world's largest privately owned fleet. At the same time, he was elected a vice president and director of the Standard Oil Company of New Jersey (Del.), the parent corporation's chief operating subsidiary.

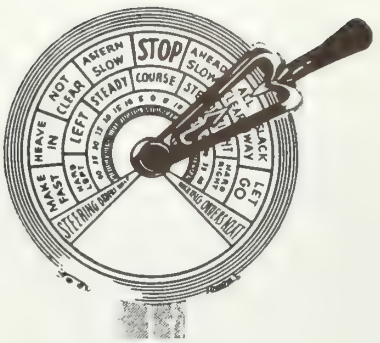
Mr. Hand was active in laying the groundwork for international tanker freeboard regulations, and in 1930 was a United States delegate to the International Load Line Conference. He took a leading part in the drive to eliminate oil pollution of bathing beaches and navigable streams.

For many years Mr. Hand was active in a movement to recodify the navigation laws of the United States. He was a vice chairman of the marine section of the National Safety Council, taking prominent part in the promotion of safety on shipboard. He was recognized particularly as an expert on charter parties, freight contracts and marine insurance, and was an associate member of the Society of Naval Architects and Marine Engineers.

Mr. Hand is survived by his wife.

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

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RULES OF THE ROAD

PART V—NAVIGATION LIGHTS REQUIRED

In previous issues we discussed the various lights required to be displayed by vessels when under way. This month the series continues.

Anchor Lights. Article 11

The riding lights required to be displayed by vessels at anchor (except for vessels not more than sixty-five feet when at anchor in a special anchorage area) are the same in both the International and Inland Rules.

The length of a vessel shall be deemed to be the length appearing in her certificate of registry.

Vessels under one hundred and fifty feet in length are required to carry in the forward part of the ship, where it can best be seen, at a height not exceeding twenty feet above the hull, a white light that is visible all around the horizon for a distance of at least one mile.

Vessels one hundred and fifty feet or upwards in length are required to carry in the forward part of the vessel, where it can best be seen, at a height of not less than twenty feet nor more than forty feet above the hull, one white light; and at or near the stern, another similar white light not less than fifteen feet lower than the forward light. Both of these lights shall be visible all around the horizon for a distance of at least one mile.

QUESTION

When is a vessel at anchor?

ANSWER

A vessel is "at anchor" when held by an anchor or made fast to a buoy; when weighing anchor, a vessel remains "at anchor" until her anchor has left the ground, or until she is no longer held fast, after which she is under way.

It is to be noted that Article 11 states that the higher light shall be in the forward part of the vessel; the usual and best location is on the fore topmast stay and well away from the mast. The rule is more specific regarding the position of the after and lower light (if required); it must be at or near the stern, usually hoisted on the flag staff. It must be remembered that the height above the hull must be interpreted to mean, "height above the forecastle deck"; some vessels make a practice of placing the forward light on top of the jack staff. This may be permissible for vessels under one hundred and fifty feet in length. On such vessels, the height of the light must not exceed twenty feet; however the top of the jack staff could hardly be construed as the location "where it can best be seen all around the horizon." On vessels of one hundred and fifty feet or over, the forward light must be at least twenty feet above the forecastle deck, so it is obvious that the only logical location would be to attach the light to the fore topmast stay.

The erroneous opinion prevails among many seamen that, if their vessel is at anchor and well lighted up by means of deck lights, flood lights, etc., then they are giving legal notice to other vessels of their presence and will assume no liability should another vessel collide with the vessel at anchor and so lighted. Many anchored vessels have recently been held at fault on account of improperly placed anchor lights, the doctrine of law being that the prescribed lights shall stand out clear and bright from sunset to sunrise. All approaching vessels are entitled to this notification of the anchored vessel's presence; no amount of deck lights, flood lights, etc., can ever be a substitute for the prescribed anchor lights.

Day Signal for Anchored Vessels

There is no day signal prescribed in the International Rules for a vessel at anchor. The black ball that is used to designate an anchored vessel is authorized only by Pilot Rule Number Six, hence its use is restricted to steam vessels of over three hundred gross tons when at anchor in the inland waters of the United States. At first glance, it would seem that the use of the black ball for a vessel at anchor would be in confliction with Article 14 of the Inland Rules, however, a careful reading of that article will reveal that the black ball *may* be used to designate a steam vessel proceeding under sail only, but having her funnel up. On the other hand, Article 14 of the International Rules states that a vessel proceeding under sail only but having her funnel up, *shall* display the black ball. However, seamen are now using the black ball in waters where the International Rules govern, but it should be remembered that such a practice is entirely without legal sanction. I have never heard of a vessel at anchor being held at fault for using the black ball under the International Rules; however, the very remote possibility exists that, should a vessel at anchor in waters where the International Rules govern be run down by another vessel, the colliding vessel's attorneys may find it to their advantage to argue that the anchored vessel was displaying an unauthorized signal.

Vessel Aground In or Near a Fairway

Should a vessel be aground in or near a fairway in waters governed by the International Rules, then she would, by night, display the anchor light or lights for a vessel of her class and also the two red "not under command" lights. No day signal is prescribed for a vessel in this situation by day. In the case of the Carlotta, the courts expressed the opinion that the two black balls would not be required, but the vessel aground could show the international code flags in order to advise other vessels of her predicament. There is no specific signal prescribed in the Inland Rules for a vessel aground in or near a fairway; the regular anchor lights could be displayed; the danger signal or distress signals could also be used if necessary.

Vessels Alongside a Dock

A vessel moored at a dock is not required to show the anchor lights as prescribed in Article 11. The rule of good seamanship requires a light to be placed in a conspicuous part of any vessel which may be moored at the end of a pier, or in such a way that her bow or stern extends out into waters which are constantly traversed by other craft. Many ports have a local harbor ordinance requiring such lights to be placed on vessels, disregard of such ordinance being just as serious as violation of the International or the Inland Rules of the Road.

Nested Vessels at Anchor

Any vessel made fast to another at anchor must maintain her own individual and proper anchor lights. This of course is of particular interest to naval vessels, which are frequently nested while at anchor.

QUESTION

How much chain must be payed out by a vessel at anchor?

ANSWER

The amount of chain used depends to a great extent upon the nature of the holding ground, weather conditions, and the duration of time the vessel expects to remain at anchor, the general rule being to use a length of chain about six or seven times the depth of the water. Always remember that it is better to veer chain before the anchor starts to drag; it is much easier to prevent an anchor from dragging than to make it regain its hold after it has once started to drag.

Pilot Vessels. Article 8

The requirements for lights to be shown by pilot vessels when on duty station are the same in both the International and the Inland Rules of the Road. When any pilot vessel is not on her duty station, then she shall show only the lights required for a vessel of her class, as prescribed by Articles 2 and 10.

A pilot vessel within the limits of her station, is "engaged on her station on pilotage duty," not only while she is actually putting a pilot on board or taking him off a ship, but also while she is cruising or at anchor and on the lookout for ships.

Steam pilot vessel on duty station and under way shall show the regular side lights and, at the masthead, a white light visible all around the horizon; eight feet below this white light there must also be a red light visible all around the horizon for a distance of two miles; and also show a flare-up light at fifteen minute intervals. Should a steam pilot vessel be anchored while on duty station, she will show the white and red light and the flare-up light, but will not show the side lights.

Sailing pilot vessel on duty station and under way will show only the white light at the masthead visible all around the horizon, and the flare-up light; upon the near approach of other vessels they shall flash their side lights in order to show the direction in which they are heading. If at anchor, they show no side lights.

A small pilot vessel that goes alongside other vessels may show the white light and the side lights at intervals instead of carrying fixed lights.

QUESTION

Is there any required difference in the lights carried by steam pilot vessels on the Mississippi River and the lights for pilot vessels as prescribed by Article 8 of the International and the Inland Rules?

ANSWER

Yes, steam pilot vessels on the Red River of the North, and rivers emptying into the Gulf of Mexico and their tributaries are required, in addition to the masthead light and the green and red side lights required on ocean steamers, to carry a red light hung vertically from three to five feet above the foremast head light, for the purpose of distinguishing such steam pilot boats from other steam vessels. Refer to 33 USC 320, Rule 11.

Fishing Vessels. Article 9

In no case do vessels showing the special lights for fishermen show any side lights under either the International or the Inland Rules.

Inland Rules

Under the Inland Rules, the same lights are carried by all types of vessels engaged in any kind of fishing; that is, two lights visible all around the horizon; the upper lights shall be red and visible for two miles, and the lower light shall be white and visible for three miles. The vertical distance between these lights shall be from six to twelve feet, and the horizontal distance between them, if any, shall be not over 10 feet.

International Rules

A distinction is made in Article 9 of the International Rules between two methods of fishing:

1. Trawlers, including dragnet and dredgers.
2. Line fishing and drift net fishing.

A vessel is trawling when engaged in dragging any apparatus, such as nets or scoops, along the bottom of the sea. They usually run with the tide and their speed rarely exceeds two or three knots; these vessels are usually comparatively large in size and work either by day or night in deep water at considerable distance offshore.

Drift nets are usually laid out with the wind and may be two miles in length, buoyed at intervals and extending to windward of the vessel, which rides to the wind and to leeward of her nets.

Lines are laid out across the tide for distance of sometimes several miles and are usually marked by means of small buoys carrying flags. Line fishing is usually done by day and drift net fishing by night.

Open boats under International Rules, when engaged in any kind of fishing by night, shall show, if the outlying tackle does not exceed 150 feet in length, one white light visible all around the horizon; if the outlying tackle exceeds 150 feet in length, then at the approach of another vessel they shall show a second white light at least three feet below the first white light and at a horizontal distance of at least five feet away from it and in the direction of the outlying tackle.

Vessels (except open boats) with drift nets or lines in the water shall carry two white lights, visible all around the horizon for a distance of three miles. The lower of these two lights shall be in the direction of the nets, six to fifteen feet lower and five to ten feet away from the upper light in a line with the keel.

For the purpose of displaying lights, line fishing is the same as drifting, except that, when shooting or towing lines, they shall carry the prescribed lights for vessels of their class when under way.

Within the Mediterranean Sea and in the seas bordering the coasts of Japan and Korea, sailing fishing vessels of less than twenty gross tons are only required to show the lower white light upon the approach of other vessels, and even then it is only required to be visible for one mile instead of three miles.

Steam Trawlers
(International Rules)

A steam trawler at work by night shall carry a tricolored lantern in place of the regular white masthead light. Such lantern shall be constructed so as to show a white light from dead ahead to two points on each bow, and a green and red light from two points on each bow to two points abaft the beam on the starboard and port sides respectively; and, from six to twelve feet below the tricolored lantern, there shall be a white light visible all around the horizon. These lights shall be visible for a distance of two miles.

Sailing trawlers at work by night shall show only a white light visible all around the horizon for a distance of two miles, and, upon the approach of other vessels, shall show a white flare-up light.

Any vessel engaged in fishing may at any time use a flare-up light or whatever working lights are necessary.

Day Signals for Vessels Engaged in Fishing

In the daytime, all fishing vessels at work and *under way*, shall, upon the approach of another vessel, display a basket or other efficient signal where it can best be seen.

Fishing Vessel at Anchor

All fishing vessels at anchor without any gear in the water shall show only the prescribed anchor lights for vessels of their class, *i.e.*, of less than 150 feet in length, shall display one anchor light; if 150 feet or over, shall display two anchor lights (see Article 11).

Should a vessel when fishing become stationary on account of her gear getting fast to a rock or other obstruction, she is then a vessel "at anchor" and, in addition to the required anchor lights, shall, upon the approach of another vessel, show an additional white light at least three feet below and at least five feet away from the anchor light and in the *direction of the gear*. By day, vessels in this situation shall show a basket or other efficient on the side to which those *vessels can pass*.

QUESTION

Are fishing vessels that are "not under command" while at sea required to show the two red "not under command" lights?

ANSWER

No, fishing vessels are never required to display the "not under command" lights by authority of Article 9(k).

QUESTION

Dear Skipper:

I am employed on a fishing boat and would like to know what lights are required on a steam trawler while we are engaged in hauling in the trawl?

Yours truly,
H. C. M.

ANSWER

A steam trawler hauling in her trawl, or with her trawl on deck about to shoot it again on the same ground is "engaged in trawling" and must carry the tricolored lantern and the lower white light, as prescribed in Article 9(d). But, if she has hauled in her trawl and is on her way to another location to trawl, then she must extinguish her fishing lights and show only the ordinary lights for a vessel of her class while under way, as prescribed by Articles 2 and 10.

QUESTION

Dear Skipper:

How can I distinguish by day at sea, at one mile distant, between a drifter, a trawler and a long line fishing vessel at work?

Yours truly,
B. A. H.

ANSWER

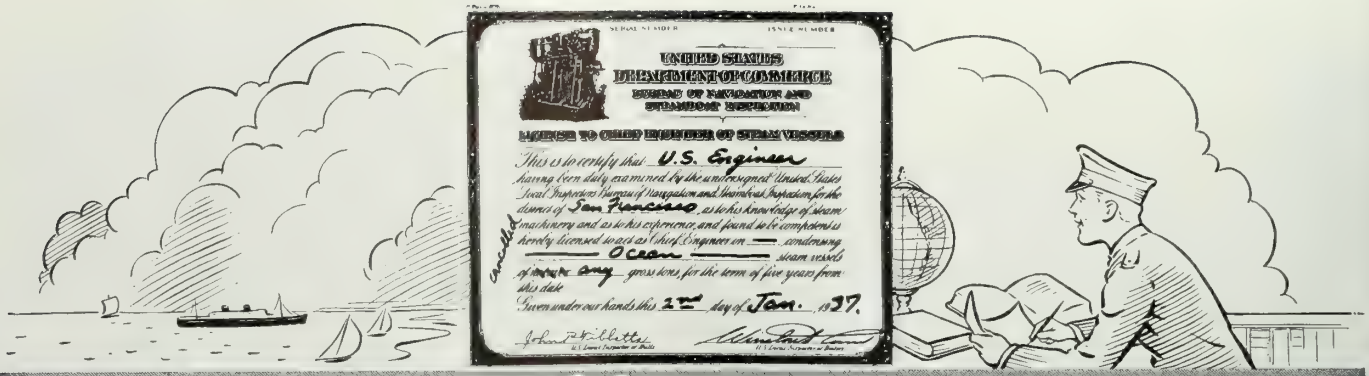
All fishing vessels while under way will show a basket or other similar object as prescribed by Article 9(k).

If the vessel was fishing with drift nets, you would see a line of small buoys extending off to windward of the fishing vessel; these buoys would be supporting the nets.

Should the vessel be engaged in long line fishing, you would see a string of small buoys carrying small flags and laid out across the tide; these would mark the position of the line.

A trawler, under way by day, would show only the basket or other efficient signal.

This series will be continued next month with a clarification of the meeting and passing situation under the International and the Inland Rules.



SERIAL NUMBER ISSUE NUMBER

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DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION AND
STEAMBOAT INSPECTION

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ELECTRIC PROPULSION OF SHIPS

FUNDAMENTALS (Continued)

As explained in our last article, we assume that the marine engineer has a basic knowledge of direct-current electricity, and we are introducing him to alternate current electricity through point-by-point comparison. The reader is advised to read again the last article before proceeding with this discussion.

Under the subject of ac power as there treated, that power is measured in watts or kilowatts equal to the volts multiplied by the amperes, when single-phase two-wire resistance loads, like heaters and lamps, were used; and it was stated that for motors and transformers and three-phase circuits a multiplier was used (to be explained later).

In as much as there is no comparison of this ac multiplier in dc electricity, the point-by-point method of comparison cannot be used.

In ac electricity two multipliers together with volts and amperes are used to obtain true power. They are the **Power Factor** and the **Polyphase** or **Three-Phase Constant.**

POWER FACTOR

One of the most interesting, yet difficult, phenomena to explain with ac electricity is the fact that we can have a circuit in which an alternating current is flowing under the influence of an alternating voltage, yet there is no power or watts, or only the smallest amount relatively delivered by the circuit. This is because the voltage is absorbed in overcoming an electro-magnetic condition in the circuit, similar to the inertia effect of a reciprocating mass or weight, and is not overcoming resistance, or only a relatively small amount.

We can measure, and suppose we find them to be 100 volts and 10 amps. One hundred times 10 is 1000, but we do not have 1000 watts. There is no heat in the circuit, no light, no work done, or only a relatively small amount. Suppose we find that there is 150 watts of work being done. Then the product 1000 is called **Apparent Power,** or **Volt-Amperes,** and the 150 is called **True Power,** or just power. In referring to these, it is necessary that we specify which, and this explains why we see the words **True Power** used so much in ac textbooks. The true power is represented by work done, heat or light. The apparent power is only a mathematical product of volts times amperes.

It is relatively simple to build an instrument or meter, called **Wattmeter,** to measure true power. It is practically impossible to make an instrument to indicate volt amperes or apparent power. They have been built and used in shore plants, and consist of a combination of two instruments and a complex mechanical multiplying device.

The ratio of the true power to the apparent power is called the **Power Factor.** Thus, $\text{P.F.} = \frac{\text{True Power}}{\text{Apparent Power.}}$ In the example given, the P.F. equals 150 divided by 1000 or .15.

Power factor is always a ratio usually expressed as a decimal number, but spoken of as a percentage. Thus, the .15 P.F. would also be referred to as 15% P.F.

True power can never be more than the volts times amperes, thus, never more than the apparent power. Hence the P.F. can never be greater than 1.00 or 100%.

The power factor of a circuit is determined by the characteristics of the circuit (the load devices), and not by the ac generator. Thus, the ac motor, its size, kind, and degree of loading and voltage determine the power factor of the circuit, and of the generator supplying it.

Small ac motors at normal voltage will vary from 82% P.F. at full load to 20% P.F. at no load; moderate sizes, from 88% to 20%; and large ones, from 95% to 20%, or less. **The synchronous motor is an exception to this, as will be explained under that heading.**

Single-phase ac motors draw more current for the same voltage and load than dc, because of the power factor. Also, whereas the ammeter on the dc switchboard indicates the load on the generator, the ac ammeter does not give an accurate indication of the load. Ac switchboards, therefore, have wattmeters as well as volt meters and ammeters. Dc switchboards seldom have wattmeter.

Instruments are made to indicate power factor and ac generator switchboards usually have such a meter.

Power factor of less than 1.0 is said to be lagging if caused by electro-magnetic effect of the circuit.

Power factor of lights and heaters is always 1.0 because there is no magnetic fields or magetism caused by the current flowing.

Power factor at less than unity (1.0) can also be caused by a dielectric phenomena of the circuit. When the circuit has **Condensers** or **Capacitors** which are momentarily charged and discharged by the alternating voltage and current flows into them, then out of them again, the P.F. is **Leading** instead of lagging. This phenomena is comparable to the spring or elastic effect in mechanical devices.

Thus lagging P.F. is caused by what may be considered the effort of reciprocating a heavy mass without doing work, and leading P.F. is caused by what may be considered the reciprocating of a strong spring in compression and stretching.

Electricians speak of the electro-magnetic, or inertia of mass effect, as the **Inductance** constant of a circuit, which, when oscillated at a specific frequency, imposes a **Reactance** to the flow of the ac current, causing it to lag in time or phase behind the corresponding voltage. This gives rise to the expression, **Lagging Power Factor.**

Electricians also speak of the dielectric characteristics of the circuit as the **Capacitance** constant of a circuit, which, when oscillated at a specific frequency, imposes a **Reactance** to the flow of ac current, causing it to **Lead** ahead of the corresponding voltage, which gives rise to the expression, **Leading Power Factor.**

This leading and lagging *of the current with respect to its corresponding alternating voltage may also be caused by synchronous machinery in parallel (to be discussed later).*

The marine engineer who is interested in this particular part of the subject will find that "Sparks," the radio officer, will talk to him intelligently and at great length on capacitance, inductance, resistance, and oscillating current, although the power factor part of it may not interest him so much.

Leading power factor and capacitance will not often be encountered aboard ship, although capacitors (condensers) are used to improve a low lagging power factor circuit to a higher or better power factor.

Low power factors are not desirable as they mean carrying a large current to do a relatively small amount of work. The large currents cause excessive heating and voltage drop in both the generators and the circuit conductors. Fortunately, the low power factor of motors occurs at low loads, so that the current is never more at light loads than at full loads, but it is quite to be expected that the no-load current of motors be from one-third to one-half as much as the full-load current. Thus at no load, the dc motor only draws enough current to supply its field and friction losses perhaps five to ten per cent; the ac motor draws from thirty-five to fifty per cent normal current at no load. Some types of ac current may draw as much as full-load current running no load, so that there is no change in current when the motor is loaded, only a change in power factor.

Mechanical Analogy

If the engineer would like to consider further the rather complex and obtuse phenomena of power factors, let him consider the following attempt to set up a mechanical model to demonstrate it.

If we were to transmit power by a belt running over a driver pulley and a driven pulley, the power transmitter would be measured by the difference in tension between the outgoing and incoming side of the belt multiplied by the speed of the belt. The power would be foot pounds per minute, which divided by 33,000 would be horsepower. At full load, we would have full difference in tension and full speed. At no load, we would have speed but very little difference in tension, and practically no load on the belt.

Suppose, instead we were to transmit power by an oscillating connection rod between a long driving crank arm and a long driven crank arm, which moved back and forth, instead of around in a circle. The rod would first push, then pull, to overcome the resistance of the driven crank.

The force in the rod and its speed or motion would both alternate. However, although the force is reversed, the direction of motion is also reversed, so that power is transmitted from driver to driven crank in both the going and coming stroke. We could multiply the effective (approximately average) and get the effective power in foot pounds per minute, which divided by 33,000 would give the horsepower. This, then, would represent the alternating current transmission of power at unity, 1.0, power factor.

Now, suppose, however, that the long driven crank arm had a large mass or weight fastened to it. This oscillating weight would require a large force in the rod to only start and stop the weight. This parasitic force would do no useful work in overcoming friction or load on the crank shaft, but would in one position resist the effort of the driving crank, and, in another position, it would strongly help the driving crank. In other words, the work done on the weight by the driver is stored up momentarily in the inertia of the weight, then is violently hurled back to the driver. We have power or work being passed back and forth between the driver and driven crank as useful work.

If we were to measure the effective force in the rod and multiply it by the effective speed of the rod, we would not at all represent foot pounds per minute of power delivered to the driven shaft.

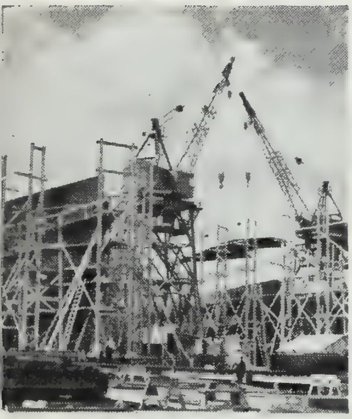
If we were to now add a friction load to the driven oscillating crank shaft, it is quite possible that we could go to a full load there, without increasing either the force in the rod or its speed, but merely change the time sequence of the force and motion; so that instead of the force occurring when the speed is zero, and the speed maximum occurring when the force is zero, we have them both occurring more nearly at the same time, thus delivering net power without increase of either.

This, then, is illustrative of the motor which may go from no load to full load with little, perhaps no increase in current, but only an increase in power factor, or an improvement in the time-phase relationship of the voltage and current.

If now, we remove the weights from the crank and add strong springs so that they are compressed at either end of the stroke, we have a similar case of parisitic force in the rod doing no work on the crank shaft. Analysis will show that the relative time phase of the force and motion is opposite, so that one case may be called lagging and the other leading. And furthermore, if we have too much of one, it may be canceled out by the other. The low power factor of the crank with heavy weights could be improved by adding springs and the crank and rod systems could be adjusted to act as though it had no weight at all, and the only forces in the rod would be those to overcome friction in the driven shaft.

Our next article will discuss two- and three-phase circuits.

The reader must bear with patience this fundamental groundwork in ac phenomena as otherwise the discussions of electric-drive ships would be only a description with no understandable facts or really useful information.



On the Ways - SHIPS IN THE MAKING

New Liberty Contracts

Liberty and C-4 Contracts

The Maritime Commission March 4 announced the award of contracts covering 163 additional cargo ships, the construction of an additional shipyard in the Portland, Oregon, area under existing management, a new yard at Jacksonville, Florida, and the expansion of an existing shipyard at Richmond, California. These contracts make a total of 922 merchant ships ordered by the Commission since January 6.

The new contracts provide for 148 Liberty ships and 15 C-4 type cargo ships, and bring the total of merchant ships now under contract in United States shipyards to over 1800, and the total of emergency Liberty ships to 1222.

The shipbuilding contracts just announced are as follows:

Kaiser Co,. Inc. Vancouver, Washington	24 Liberty type
St. John's River Shipbuilding Co. Jacksonville, Florida	30 Liberty type
Permanente Metals Corp. Richmond, California	24 Liberty type
Kaiser Co., Inc. Swan Island, Oregon	70 Liberty type
Kaiser Co., Inc. Richmond, California	15 C-4 type

Shipyard facilities to be built are: a new ten-way shipyard at Swan Island, near Portland, Oregon, for the Kaiser Company, Inc.; a six-way yard at Jacksonville, Florida, for the St. John's River Shipbuilding Company; and the addition of three ways to the Permanente shipyard at Richmond, California. This latter yard has been previously known as the Richmond Shipbuilding Corporation.

These 19 new shipways will make a total of 169 ways authorized by the Maritime Commission since the emergency ship construction program began about a year ago.

On March 25, the Maritime Commission awarded the new Swan Island yard of Kaiser Co., Inc., at Portland, Oregon, a contract for 56 tankers, to be built in place of the order for 70 Liberty ships previously contracted.

234 More Liberty Ships

Contracts calling for the construction of 234 emergency cargo vessels of the Liberty ship class, and two shipyards comprising the 34 shipways were awarded March 16 to Higgins Industries, Inc., of New Orleans, and the W. A. Bechtel Company of San Francisco, by the Maritime Commission.

The contracts awarded bring the total of Liberty vessels thus far ordered since February, 1941, to 1456.

The Higgins contract, largest single order yet placed for Liberty ships, calls for 200 vessels to be built in a shipyard to be constructed near New Orleans. All of the ships are to be completed and delivered by December 31, 1943. This production schedule is made possible by application of assembly-line technique.

The 34 vessels awarded the Bechtel Company are to be constructed in a six-way yard to be built at Sausalito, in the San Francisco Bay area. They also are to be delivered in 1942 and 1943.

The six new ways in the California yard and the facilities at New Orleans, which will be the equivalent of 28 conventional ways, will make a total of 203 which have been authorized by the Maritime Commission since the emergency ship construction program was begun about a year ago.

Rheem To Build "Libertys" At Providence, R. I.

Primarily steel fabricators, the Rheem Company of Richmond, California, with branches in many important industrial centers, enters the shipbuilding field with a contract for 32 Liberty ships, awarded by the Maritime Commission on March 23.

Their new yard will be constructed immediately near Providence, Rhode Island, and keel laying is scheduled within a few months.

Many officials from the Richmond office have been transferred to the yard at Providence, according to Richard S. Rheem, president of the company.

Puget Sound Yards Get $20,000,000 Contracts

The Bellingham Marine Railway & Boatbuilding Co., Bellingham, Washington, was awarded a contract for eight mine sweepers, at a cost of $3,000,000, late in March. This brings the total of Navy contracts of this yard to $6,250,000. To meet the production schedule, the yard will work on a 24-hour day, seven days a week.

On March 23, the Navy contracted with four of Tacoma's major boat-

ELBRIDGE GERRY, 13th Liberty ship, launched at "Calship" on February 28.

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yards for construction of more than $17,000,000 worth of wooden mine sweepers.

The four yards sharing in the award are: J. M. Martinac Shipbuilding Corporation, Western Boatbuilding Co., Mojean & Ericson Co., and Tacoma Boatbuilding Co.

New Sausalito Yard Begins Construction

The newly organized **Marin Shipbuilding Division, W. A. Bechtel Company,** started building their new six-way yard on Richardson Bay at Sausalito, California, within a week after receiving a contract for 34 Liberty type vessels from the U. S. Maritime Commission on March 17.

Engineers in charge of construction are using the same staff which built the California Shipbuilding Corporation yard on Terminal Island. This yard is expected to be the most modern in the field, according to K. K. Bechtel, vice president of W. A. Bechtel Company and in charge of this yard, and will have production-line methods, including maximum prefabrication.

Federal Launches C-2

The Federal Shipbuilding and Dry Dock Co., Kearny, N. J., launched the U. S. S. Titania, a cargo vessel of the C-2 type, on February 28. Under construction of the Maritime Commission, the vessel will be turned over to the Navy upon completion.

U. S. M. C. Awards 26 Tankers

Award of contracts for construction of 26 tankers, of which 14 will be the Cimarron tanker type and 12 the coastal tanker type, was announced March 21 by the Maritime Commission.

The 14 Cimarron type, one of the largest and fastest tankers afloat, will be built by the **Bethlehem Steel Company** in its yard at **Sparrows Point, Maryland.** The Maritime Commission has awarded contracts for 181 of the large types of tankers since it launched its emergency shipbuilding program a year ago. There are also 48 under order on private contract.

Eight of the coastal tankers will be constructed by **Gray's Iron Works,**

●

MRS. R. S. HOLMES, wife of Rear Admiral Holmes, Commandant of the 11th Naval District, sponsored the Elbridge Gerry, while her daughter, Mrs. Irving Camp, matron of honor, stands free from the splash.

NAVY GROUP, from the Naval Operating Base at San Pedro, at the launching of the Elbridge Gerry, with sponsor and matron of honor.

Inc., of Galveston, Texas, and four will be built by the **Barnes-Duluth Shipbuilding Company** of Duluth, Minnesota.

These contracts make a total of 28 coastal tankers ordered by the Commission since the beginning of the current program. The length of a coastal tanker is 220 feet, its beam 37 feet, and its draft 12 feet 10 inches. It is Diesel propelled.

Bethlehem Alameda Plant To Be Reconditioned

Idle since World War I, except for repair work, the old Bethlehem shipyard at Alameda, California, was recommended by the Maritime Commission early in March to be reconditioned and used for building of 20,000-ton ships, as revealed by Olaf Laurgaard, resident engineer of the Maritime Commission, San Francisco.

A new corporation was formed to facilitate operation of the plant to be known as the Bethlehem Alameda Shipyard Company, with A. B. Homer as president; A. S. Gunn, vice president; Fred McClean, plant manager; and A. F. McLane, chief engineer.

Hunters Point Yard To Be Enlarged

The U. S. Navy will expand the Hunters Point yard, San Francisco, formerly owned by Bethlehem Steel, as announced March 1 by the 12th Naval District.

Contracts For 450 Wooden Barges

Six companies were awarded contracts on February 28 by the Maritime Commission for the construction of a total of 450 non-propelled wooden barges. The successful bidders are:

Contractor	*No. of Barges*	*Price per Barge*
Palatka Shipbuilding Co. Palatka, Florida	100	$2,295.09
The City Lumber Co. Bridgeport, Connecticut	100	$2,489.00
Brownsville Shipbldg. Corp. Brownsville, Texas	50	$2,589.00
C. D. Johnson Lumber Corp. Portland, Oregon	100	$2,667.30
Scott Graff Company Industrial Construction Corp. Duluth, Minnesota	50	$2,790.00
Lyons Construction Co. Whitehall, Michigan	50	$3,000.00

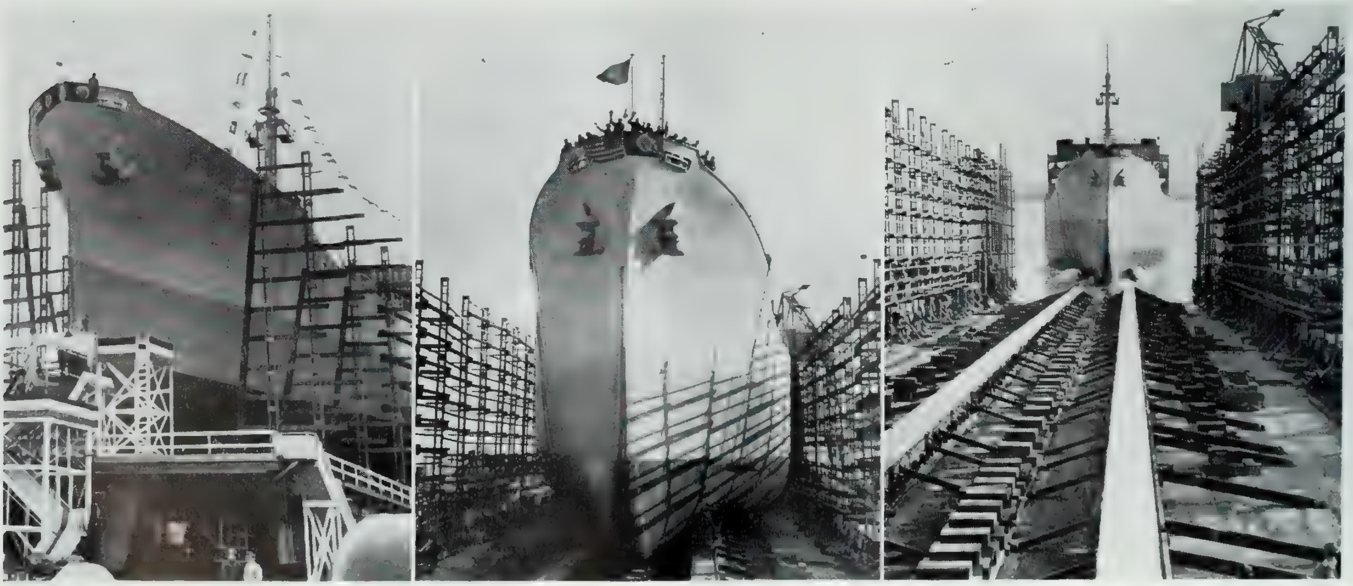
The barges, to be delivered unassembled f.o.b. freight cars at contractor's plant, are to have a carrying capacity of 99 tons. They will be 60 feet long, 18 feet wide, and six feet in depth.

The Commission sent out the invitation for the bids on January 17 and received and opened them on February 2.

3 Launchings in One Day On San Francisco Bay

Three launchings on March 15 on San Francisco Bay, although unusual now, is an indication of what can be expected almost any day on the bay when the shipbuilding program gets into peak production later in the year and in 1943.

The Moore Dry Dock Co., Oakland, California, launched the 9400-ton



TANKER S. S. GETTYSBURG launched at the Chester, Pennsylvania, yards of Sun Shipbuilding and Dry Dock Company.

SHIPBUILDERS
and ENGINEERS

BUILDING WAYS FOR WOOD AND STEEL CONSTRUCTION

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ALAMEDA PLANT
**Machinery, Hull
and Industrial Repairs**
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FOOT OF SCHILLER STREET
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GENERAL ENGINEERING
and DRY DOCK COMPANY

Golden Eagle, a C-2 cargo vessel built for the U. S. Maritime Commission, on March 15. The sponsor was Mrs. John D. McKee, wife of the chairman of the board of directors of the American Trust Company.

The City of Richmond, California, was the scene of the two other launchings, where the Richmond Shipbuilding Corp. shortly before noon launched the S. S. Anthony Wayne, the fifth ship launched from this yard since December.

Mrs. John R. Jago, wife of the U. S. Maritime Commission's resident engineer, sponsored the Liberty ship.

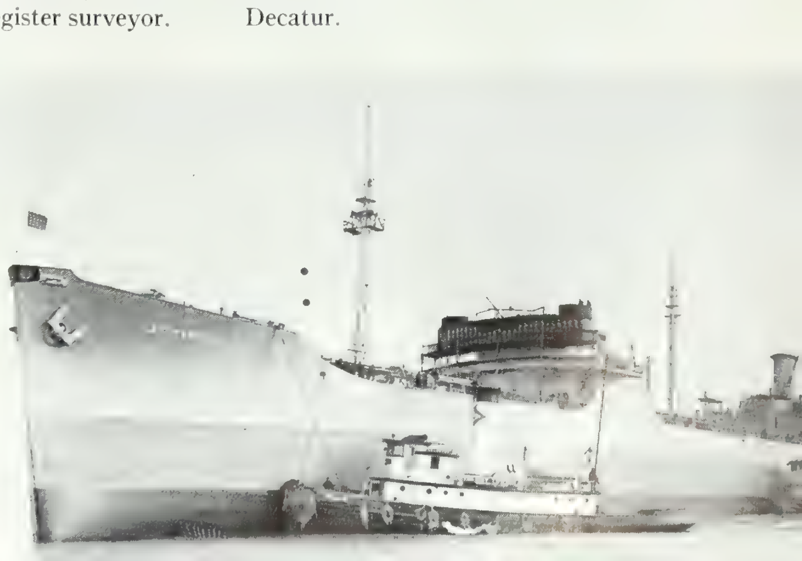
Thirty minutes later, the Todd-California Shipbuilding Corp. put the S. S. Ocean Volunteer, an emergency type freighter for the British Purchasing Commission, into the water, sponsored by Mrs. John Rannie, wife of a Lloyd's Shipping Register surveyor.

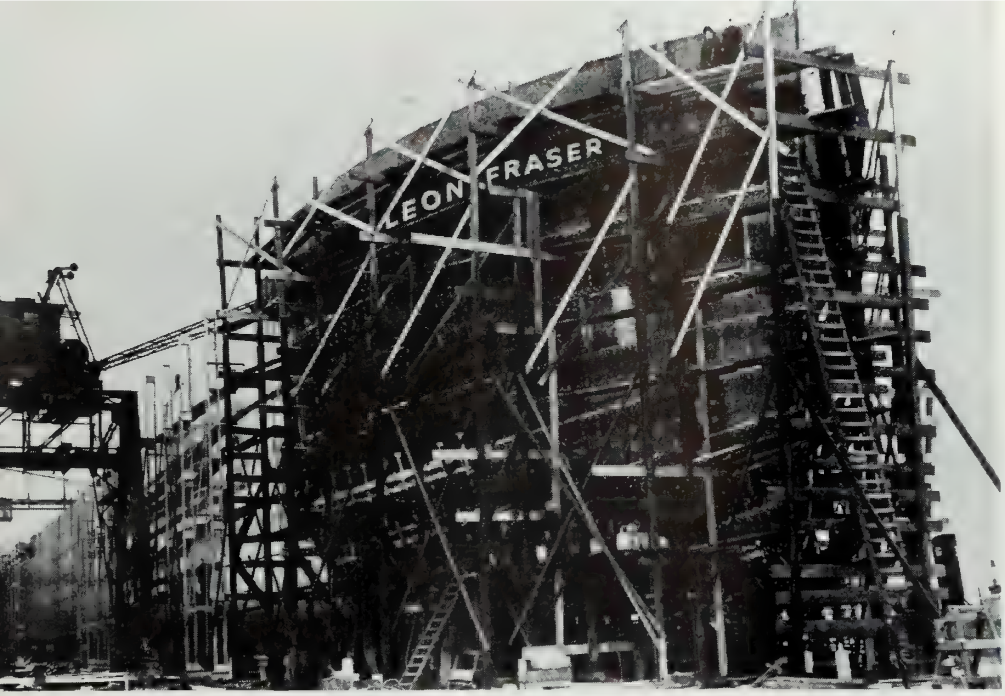
Bethlehem Launches Fifth 1700-ton Destroyer

The Frazier, fifth of a series of 1700-ton destroyers being built at the San Francisco yards of the Bethlehem Steel Co., was launched on March 17.

Mrs. R. P. McCullough, wife of a captain in the intelligence office of the 12th Naval District, was sponsor of the craft named after one of America's most colorful heroes, Seaman Daniel Frazier, who was accredited with thrusting out his head to receive a blow from a pirate's scimitar, thus thwarting the attempt to kill Stephen Decatur.

GETTYSBURG (right) at the outfitting docks and (left) the sponsor, daughter of Robert Haig, president of Sun Shipbuilding and Dry Dock Company.





STEAMER LEON FRASER WHILE UNDER CONSTRUCTION

MRS. LEON FRASER
sponsored the biggest ore carrier on Great Lakes

Largest Great Lakes Ore Carrier Launched

An important addition was made February 28 to the war effort of the United States when the Great Lakes ore carrier Leon Fraser was launched for the Pittsburgh Steamship Company, United States Steel subsidiary, at the River Rouge yards of the Great Lakes Engineering Works at Ecorse, Michigan. The vessel is the largest ever built on the Great Lakes.

The vessel was sponsored by Mrs. Leon Fraser, wife of the president of the First National Bank of New York, for whom the ship was named. Mr. Fraser is a member of the board of directors and a member of the Finance Committee of United States Steel Corporation.

The Leon Fraser, with four identical sister ships now on the ways, will constitute an important addition to the ore carrying fleet of the Pittsburgh Steamship Company fleet — already the largest on the Great Lakes. The five new vessels will increase the number of steamers under Pittsburgh operation to seventy-three.

With a total length of 639 feet, a beam of 67 feet, and a depth of 35 feet, each of the new vessels will be capable of hauling 18,600 long tons of ore per trip at 24-foot draft. This substantially exceeds the capacity of any other ship on the Great Lakes. Each ship will be able to carry enough iron ore in a single trip to produce steel sufficient for the construction of eight destroyers, if the material is used for that purpose.

Each vessel is to be propelled by a cross - compound, double - reduction geared steam turbine, taking steam at 400 psi and 750° F. from two automatic stoker-fired, coal-burning water tube marine boilers.

Two of the remaining four vessels also are being built at Great Lakes Engineering Works, while the other two are on the ways at the yards of American Shipbuilding Company at Lorain, Ohio. It is planned to have all five freighters in service sometime during the 1942 shipping season.

(Page 92, please)

GENERAL MacARTHUR'S SISTER-IN-LAW, Mrs. Arthur MacArthur (left), was sponsor of the U. S. S. McCalla, second of two destroyers launched on March 20 at Federal Shipbuilding and Dry Dock Company, Kearny, N. J. The McCalla (middle) is shown going down the ways. U. S. S. Lardner, first to be launched, was sponsored by Mrs. Sidney F. Tyler, 2nd (right), the great-granddaughter of Admiral James Lawrence Lardner. *U. S. Steel Photos*

Alert for Safety

"He Who Relaxes Is Helping the Axis"

by Rear Admiral Howard L. Vickery, U.S.N.
Vice Chairman, U.S.M.C.

SHIPS, IN MY OPINION, are the key to the successful prosecution of the war. While we may build airplanes, tanks, and other necessary weapons of war in profusion, and while we may train millions of soldiers, it is essential, unless we are willing that the war be fought on our soil, that ships in greater and greater numbers be made available at the earliest possible moment, to transport arms and troops to the distant theatres of hostilities. Just as tanks and planes *today,* rather than a month or two months from now, may save countless numbers of lives in the days to come, so too, ships delivered *today,* rather than in future months, insure an earlier victory.

The war and the consequent acceleration of all branches of industry has presented both an opportunity and a challenge to all engineers and managers who have pioneered and specialized in the promotion of safety in this country. The rapid growth of our plants and the training of huge numbers of inexperienced workmen, plus the ever-present dangers of sabotage, have made such problems more difficult.

Considerations of safety may seem out of place at a time when there is so little safety, not only for the military, but for civilians alike, in so many parts of the world, and when security for any of us is precarious. If safety work is considered in its broadest sense, however, as action taken to insure success of our own forces by the elimination of waste of man power and materials, its meaning in our struggle for victory becomes clear. Safety in war time means putting forth maximum efforts. To the losses encountered in normal times through ignorance and carelessness on the part of both management and labor, we must add the ever-present danger of loss by sabotage by enemy agents. These losses must be kept at a minimum by the application of safety measures.

In fact, we must consider that any action taken to insure our own victory and to frustrate enemy action is a safety measure. For example, we are considering provisions for the rapid scuttling of our merchant ships to prevent valuable cargoes, or the ships themselves, from falling into the hands of the enemy. This cannot be accomplished by the crews without incurring personal risks; hence, we are deliberately planning for unavoidable danger to a few in order to promote the safety of the many. In this and in all our wartime operations, our merchant sailors are acting in the best traditions of our country and of the sea.

American shipyards are now turning out a ship a day; by midsummer, will be delivering two ships a day; and before the end of the year and through 1943, not less than three ships a day. This mighty program, however, is only possible of attainment if everything clicks. Steel, gears, turbines, and the other hundreds of items of equipment necessary in the construction of a ship must be delivered to the shipyards on schedule. But in particular, two factors are vital: First, there must be a continuous flow of steel, and, second, there must be a continuous flow of labor. There must be no strikes. Some 500,000 man-hours of shipyard labor are required for the construction of one of our Liberty type ships; and, if steel is late in delivery, thus holding up fabrication, or if strikes occur, the time lost can never be recaptured, and you can divide the number of man hours lost by 500,000 and quickly determine the number of ships that must be taken out of delivery schedules four or five months hence. During the first ten months of 1941, strikes in the shipbuilding and in ship repair industries —and they must be considered together—resulted in the loss of over 5,000,000 man hours, or the equivalent of some 10 Liberty type ships. I know that I voice the sentiments of everyone present when I state that management and labor must cooperate to insure against any such recurrences in the future.

Modern shipbuilding, particularly as it pertains to the construction of Liberty ships, is being accomplished along assembly-line methods. One example will illustrate the operation of our policy of stripping the building yards of all functions except hull construction and installation work. For 312 of our Liberty type cargo vessels under construction in 9 yards, a single contract was placed for the required 1248 lifeboats with a manufacturer a thousand miles from the Atlantic Coast. In fact, today the Commission purchases everything that goes into the building of Liberty ships, retains it in a central pool, and consigns it to the yards as required. In pursuance of this policy, we have farmed out engines to be built in a dozen different plants. However, one engine builder made all the working plans and all the engines are duplicates; thus, an engine from any plant will go on any foundation in any ship. Moreover, we do the expediting. We follow the work to ascertain when the material is needed in the yard, and as it is required, we issue shipping instructions. Our expeditors circulate throughout the country and visit all the manufacturing plants under contract to the Commission, and are thus able to report whether the manufacturers will be able to meet delivery dates or whether they will better them.

With schedules like these, the work of the safety engineers is extremely

MARINE DEPARTMENT
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difficult because of pressure to get production, night work, the crowding of workmen, and the dangers of fire and sabotage.

It is apparent, therefore, if losses are to be avoided, that the safety promotion work in a shipyard demands a high order of cooperation between workmen, foremen and managers. The work of a safety engineer in a shipyard, with all its varied activities, is, I believe, more difficult than in a factory producing a single product and housed in a more permanent and uniform structure. Moreover, his work must progress under the pressure of actual ship production and at a time when thousands of previously inexperienced men are entering the industry. In view of this, it is my opinion that the promotion of safety work in shipyards cannot be accomplished unless the entire management assumes the responsibility for the indoctrination of workmen in safety methods.

The Commission insists upon high standards in life-saving equipment, safety devices, and reserve stability. In fact, the Commission's policy has always been to anticipate operating hazards wherever possible, and to guard against the possibility of accident, by every conceivable means. All booms and cargo handling equipment are tested for overload before the commissioning of a vessel. With the delivery of each ship to an operator, a certificate is furnished by the Commission, setting forth the limit of loads to which the cargo gear may be subjected, and all such gear is clearly marked with the maximum loads which may be handled.

Realizing that the best ships cannot be operated with safety in the hands of other than trained personnel, the Commission, in 1938, inaugurated a program for the training of seamen. At that time, the training program was designed to keep apace of the Commission's long-range plan of the construction of 50 ships a year. But as the construction program has been enlarged, the training program also has been enlarged, and is now so organized that the number of seamen and officers required to man the new ships will be available as rapidly as the ships are placed in service. The men are trained in safety methods and particular stress is placed on small boat training. Every graduate of our training system is qualified as an expert lifeboatman. In the present emergency, this is essential. In short, the men receive a thorough course in all a sailor should know for the proper and safe operation of a ship, whether large or small.

Last week I made a trip to the Gulf Coast to inspect certain shipyards constructing vessels for the Commission. As I passed through the fabricating shop of one plant, I was greatly impressed by what I saw. Every man was busy. Nowhere was lost motion evident. Glancing up I noticed a huge traveling crane coming toward me from the far end of the shop. Emblazoned upon it in red, white and blue letters were these words, which have been going through my mind ever since, and which in closing I leave with you: "THE GUY WHO RELAXES IS HELPING THE AXIS."

Abstract of an address made in New York March 4, 1942, before a meeting sponsored by the National Safety Council, and the Propeller Club of New York.

Mare Island First In Safe Shipbuilding

Mare Island Navy Yard recently added another first to its list of remarkable achievements as the National Safety Council released comparative standings of the ten largest shipbuilding and ship repair yards in the United States.

The current report, covering the period from July 1, 1941, to January 30, 1942, gives Mare Island a rate of 5.02 disabling injuries for each million hours worked, while the average rate for the ten leading shipbuilding yards is 17.71.

Rear Admiral W. L. Friedell, Commandant, Navy Yard, Mare Island, has presented the National Safety Council and Navy Department trophies to the Pattern Shop, **Guy Peabody,** master; Print Shop, **J. R. Leonard,** foreman; Galvanizing Shop, **I. H. Whitthorne,** master; Central Tool and Repair Shop, **J. E. Moon,** master, for their excellence in accident prevention for the year 1941.

The Galvanizing and Print shops received special letters of commendation from the Secretary of the Navy for having completed a ten-year period with no disabling injuries.

Thus far in 1942, the following shops stand among themselves with a perfect safety record: Sail and Flag Loft, Transportation, Foundry, Boiler Shop, Control Power Plant, Patternmakers, Print Shop, and the Galvanizing Shop.

Machine Shop 31, Joiner Shop, Electrical Shop and the Public Works Building Trades have compiled a better than average record for the current year.

Price and Priority Index

Official texts of over 600 OPA and WPB price schedules, limitation orders, allocation rulings, preference ratings, amendments and interpretations have just been made available by the N. Y. Journal of Commerce for distribution among the nation's merchants and manufacturers. A Price and Priority Index of all existing Government regulations covering a wide product range from acetone to zinc has been compiled for handy reference purposes.

Individual texts as published in the columns of the Journal of Commerce are still available in single copies or bulk quantities. Copies of the complete index may be had without charge by addressing the New York Journal of Commerce at 63 Park Row, New York.

Running LIGHTS

Who When Where

Cadet Honored

Captain W. G. Pearch of the American President Lines, on March 12, presented an outstanding award pin to Cadet Jacob A. Mikkelborg, 3d Class, U.S.N.R., a deck cadet in the U. S. Maritime Commission Cadet Corps. This award is presented to the most outstanding U. S. Maritime Commission cadet in each steamship company. Cadet Mikkelborg was presented with an award last July for high scholastic achievement which was presented by Mr. E. C. Mausshardt, District Manager of the U. S. Maritime Commission, Pacific Coast District.

Cadet Mikkelborg is 20 years of age and graduated from Everett High School, Everett, Washington, with honors, and has been a cadet in the U. S. Maritime Commission since May, 1940. In addition to receiving training to become a merchant officer, he has also received training in Basic Naval Science, and upon graduation about June 10, 1942, he will be eligible not only to sit for his Third Mate's license, but also to apply for appointment as Ensign in the U. S. Naval Reserve.

To date this cadet has sailed on the President Adams, President Grant, and President Coolidge, all vessels of the American President Lines, Ltd. He is now attached to the latter vessel, and the award was presented aboard this ship in the presence of Captain W. G. Pearch, Mr. T. J. Cokely of American President Lines, and Lieut. Commander Malcolm E. Crossman, District Cadet Training Instructor of the U. S. Maritime Commission.

Cadet Mikkelborg, like other cadets in the U. S. Maritime Commission Cadet Corps, has always expressed an interest in the sea. Prior to becoming a Maritime Commission Cadet he made several voyages on a two-masted schooner and has also sailed on yachts.

CADET JACOB MIKKLEBORG (center) being congratulated by LIEUT. COMMANDER MALCOLM CROSSMAN, U. S. Maritime Commission, upon receiving an outstanding award pin while CAPT. W. G. PEARCH looks on.

FRED CORDALL

It is with sincere regret and a profound feeling of sorrow that we chronicle the news of the sudden passing of Fred J. Cordall, for many years a most popular and highly esteemed member of the Texaco selling organization, and more recently an inspector on the staff of the United States Maritime Commission at Richmond and Terminal Island.

Fred Cordall enjoyed the friendships of literally hundreds of marine engineers, particularly aboard the vessels which entered the port of San Francisco on established schedules, during the fifteen to twenty years before the present conflict. He was an intermittent contributor to the pages of PACIFIC MARINE REVIEW, and our readers will recall his joining up with the Carpenter Line in Sydney, Australia, about two years ago. With the entry into the war of the British Empire, Fred returned to San Francisco, where he was quickly signed by the Maritime Commission for work, which his engineering talents qualified him for so expertly.

He passed away quite suddenly in Wilmington on Friday, March 27. Services were held in San Anselmo on March 31, after a Masonic funeral ceremony.

Vale, Good friend!

Propeller Club News

Perhaps one of the most important addresses **Henry F. Grady,** president of the American President Lines, ever delivered before a group representing every phase of the shipping industry was made before the officers and members of the Propeller Club of the United States, Port of San Francisco, at a luncheon meeting in the Palace Hotel just twenty-four hours before Mr. Grady embarked for India on a war mission for the President of the United States, the middle of last month.

His subject was "Problems of Commercial Policy After the War." One of the pungent sentences of Mr. Grady was that "Democracy cannot be gained merely by fighting for it. We must construct peace!"

The most urgent and the only objective that matters to the United States at present is winning the war, he said. But he stressed the importance also of giving consideration "to the problems of peace," and the answers to certain obvious questions posed by the nature of this world conflict. Some of these questions are:

"To what extent shall our factories be able to rely in the future on foreign sources for their raw material needs?

"To what extent after the war shall we be able to sell surplus products of our farmers and industrial workers in world markets? And to what extent shall we again be able to find sound investment opportunity abroad for our savings?

"Will the international mechanism of trade be restored or shall we have to resort to the barter system of primitive peoples?

"Shall we be able to enjoy, in a higher standard of living, the economic benefits arising from world-wide specialization of production made possible by multilateral trade, or shall we, as a result of economic nationalism, have to work harder and longer for a livelihood?"

Mr. Grady said the answers to these questions now depend largely on us, "on the ability of American labor and management to cooperate, on their efforts to hold down costs and prices, and on the willingness of individuals, economic classes and sections of the country to subordinate their special interests to the supreme national objective of saving the democratic cause against the drive of its formidable enemies."

Pointing out that we fought in the last war to make the world safe for democracy and then refused in the period of peace which followed to assume our rightful share of responsibility for the shaping of a "democratic international society," Mr. Grady declared:

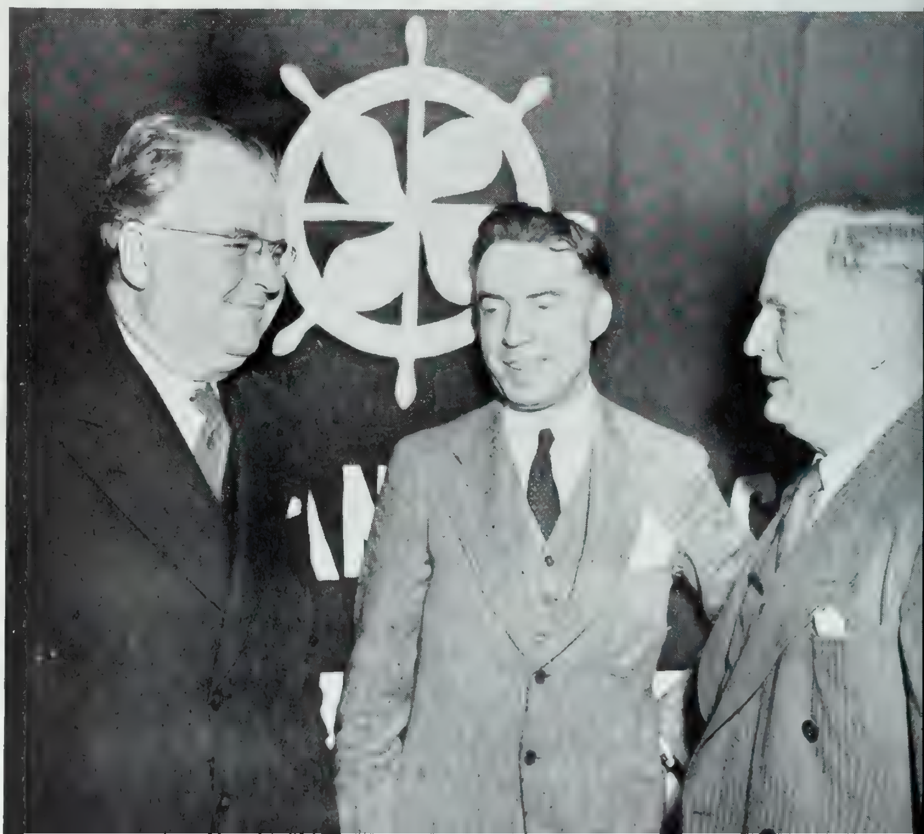
"We felt that we could rely on isolation, both political and economic, for security regardless of what happened to the rest of the world. We even refused to cooperate with other countries in order to build a more stable and prosperous world community. Instead we raised barriers against world trade which, especially in view of the heavy international debt payments having to be effected in the post-war period, contributed in no small part to the financial and economic instability of the world and ultimately to the great economic depression, disillusionment, and social unrest out of which arose militant National Socialism with all its implications.

"We must strive to remove from the world economic warfare as well as military. The latter is the corollary of the former. What only a short time ago was sneered at as sloppy, sentimental internationalism is now, because of the dramatic events of the last few months, generally recognized as plain common sense. War will continue in the world until all the major countries dedicate themselves to the formation of an international order based on recognition of the mutual interests of all. Unless we realize this simple truth, we will have gone through two ghastly, bloody wars without learning a thing. The recent Anglo-American agreement is a step in the right direction.

"This war in the final analysis is a war against economic and commercial aggression as well as against military aggression. We must win straight through if we are to win at all and establish lasting peace in the world."

Maritime Day

Arthur B. Poole, president of the Propeller Club of the United States, Port of San Francisco, has appointed a committee to meet with the senior and junior Chambers of Commerce, the Foreign Trade Association and the Commercial Club to further plans for the observance of National Maritime Day, May 22, in the Port of San Francisco.



DR. HENRY F. GRADY, A.P.L. president (left), is receiving congratulations from Charles L. Whe
executive v.p. of McCormick Steamship (right) while Propeller Club prexy Arthur Poole con

Busy marine outlet for Tubbs Cordage Company is the new Haviside Building at 40 Spear Street. Our photo shows one of the familiar Tubbs trucks making a delivery.

While war of necessity makes curtailment of the traditional gala program of aquatic events, the organizations committed to the success of this year's Maritime Day at the Port of San Francisco plan a series of luncheons and dinners as well as radio programs.

This year it is the aim on a national basis to incorporate solemnity into the program to bring home to the people of the United States the part that the American Merchant Marine men are playing in the successful conclusion of the war; and to remind us of the hundreds of lives that have been so gallantly lost by these men of the Merchant service in order that our fighting men in all parts of the world shall be supplied with guns, food, clothing, ammunition, tanks and planes as well as the hundreds of other articles of necessity to prosecute a war.

All United States flag steamship, towing and water transportation companies are requested to fly the American flag and "dress ship" on May 22. Marine stores, steamship offices and stores are asked to display flags and, wherever possible, to dress their windows with a patriotic background.

In San Francisco Captain Edward Macauley has been invited to be guest speaker, and will be introduced by John E. Cushing, West Coast representative of the War Shipping Administration.

The Maritime Commission through Rear Admiral Emory S. Land is lending every support to the observance of National Maritime Day and Eugene Hoffman, secretary of the San Francisco Propeller Club, has been advised by the national headquarters that all five of the Commissioners have accepted appointment to speak at various luncheons on May 22. The line-up follows:

Boston: Rear Admiral Emory S. Land.
New York: Rear Admiral H. L. Vickery.
New Orleans: Commissioner John Carmody.
Chicago: Commissioner Thomas W. Woodward.
San Francisco: Captain Edward Macauley.

The San Francisco office of the Pyrene Manufacturing Company, 977 Mission Street, has available for showing before local groups several copies of the official defense films showing how to combat bombs, according to Ben S. Allen, Pacific Coast manager for the company.

The title of the film is "Fighting Fire Bombs," and it is now being shown at many meetings of civilian groups and luncheon clubs. There is no charge for use of the film and information as to securing its use can be obtained from the above office of the Pyrene Manufacturing Company.

Mariners Meet

The Mariners Club of California staged a very interesting luncheon meeting on Wednesday, March 4, at the usual moorings, the St. Julian Restaurant, 140 Battery Street, in San Francisco, where President A. T. "Tom" Hunter introduced speaker of the day, Dudley Field Malone.

The guest speaker, former Collector of the Port of New York, and Assistant Secretary of State under Woodrow Wilson, chose as his topic "Politics Are Adjourned for the Duration."

A capacity audience responded and were well rewarded for their attendance, as Dudley Malone is one of the nation's ablest raconteurs. His address sparkled with lively wit, much to the delight of his audience.

Program Chairman Dick Glissman tells us April plans are now in the making, and announcements will soon be mailed to all members.

The American-Hawaiian Steamship Company announced on March 30 that they had acquired Williams, Dimond & Co., successful importers, exporters and steamship agency representatives for over 80 years, with offices in San Francisco and Los Angeles.

There will be no change in personnel of the acquired company, of which E. L. McCormick is president; R. A. McLaren, vice president; and F. C. Kugelberg, secretary.

Mr. McCormick, associated with the firm for forty years, stated that his company has always been closely affiliated with American-Hawaiian and up to 1923 had been the San Francisco agents for the line.

Award of McAllister Prize

J. Lewis Luckenbach, president of the American Bureau of Shipping, announced on March 9 that the **Captain Charles A. McAllister** Prize for Proficiency in Engineering has been awarded to **Ensign Loy W. A. Renshaw.** Mr. Renshaw was a member of the class graduating on December 19, 1941, from the United States Coast Guard Academy at New London, Conn., and is now on active duty. **Captain James Pine,** Superintendent of the Academy, nominated Mr. Renshaw for the prize.

As a memorial to the late Captain

Charles A. McAllister, the Bureau, in May, 1936, decided to continue the "McAllister Prize for Engineering," established by Captain McAllister. Captain McAllister served as president of the American Bureau of Shipping from 1926 to 1932. He was a captain in the United States Coast Guard in charge of engineering at the time of his retirement from active service.

A New Deal For Naval Architects

For fifty years the Society of Naval Architects and Marine Engineers has confined its nation-wide membership contact to an annual meeting for technical discussion and social fellowship held, with very few exceptions, in New York City. Last fall, a group of very influential members residing in and around Philadelphia decided, after some discussion, to form a local group after the manner of most of the other American technical associations.

They applied for a charter for a local section and their application was promptly granted.

This opens the way to any group of naval architects and marine engineers to form a local section anywhere, provided there are a sufficient number of members or prospective members of N.A.M.E. to make such a section worthwhile.

It would seem that three such sections on the Pacific Coast might be advisable just now, one at Seattle, one at San Francisco, one at Los Angeles.

REAR ADMIRAL CHANTRY
Chairman Philadelphia Section,
Society of NAME.

The Philadelphia section is, of course, a natural. Within a 50-mile radius, they have nearly 400 members of the parent society and a large number of prospective members. The names of the officers and committee chairman indicate a very strong leadership:

Admiral A. J. Chantry, U.S.N., chairman;
Mr. E. H. Rigg, vice chairman;
Mr. L. H. Kenney, secretary-treasurer;
Mr. L. M. Goldsmith, Executive Committee;
Capt. Garland Fulton, U. S. N., Executive Committee;
Mr. E. H. Rigg, chairman, Papers Committee;
Mr. H. C. Robinson, chairman, Meetings Committee;
Mr. F. A. Cornell, chairman, Public Relations Committee;
Mr. J. A. Davies, chairman, Research Committee;
Rear Admiral J. G. Tawresy, U.S.N. (Ret.), chairman, Nominating Committee;
Mr. P. A. Hansen, chairman, Auditing Committee;
and Mr. H. Berchard Taylor, chairman, Membership Committee.

Meetings are held monthly at the Franklin Institute.

The March meeting discussed "Electric Welding," with particular "Consideration of Residual Stresses in Welded Ships."

It is very probable that the meetings of the Philadelphia section will be conducive to very active participation in discussion on practical topics directly affecting the design, construction, and equipment of modern vessels.

Navy Relief

Playing important positions in the Navy Relief Society's fund campaign now under way throughout the nation to raise $5,000,000 for the dependents of Navy, Marine and Coast Guard personnel, are a number of men prominent in shipping activities in San Francisco.

Walter J. Walsh, attorney, president of the Army and Navy Club, president of the Twelfth Naval District Navy League of the United States, and former prexy of the Mariners Club of California, is the vice chairman for Northern California. The quota for this territory is $275,000 and Richard M. Tobin, San Francisco banker, is the general chairman.

Captain A. T. Hunter, San Francisco Bar Pilot, is a member of the Advisory and Executive Committee, as is William P. Roth, president of the Matson Navigation Company, and Harry D. Collier, president of the Standard Oil Company of California, and Eugene Hoffman, advertising director of the American President Lines, is chairman of the Publicity Committee.

This is the first time in 142 years that the Navy Relief Society has come to the public for assistance. It was made necessary, Secretary of the Navy Frank Knox explains, because of the casualties suffered by the Japanese assault on Pearl Harbor, which cost more lives than were lost in both the Spanish American and World War.

Clarence Dillion, national chairman, is head of Dillion, Reed and Dillion, New York financiers. He announces the following imposing list of leaders of business, industry and labor as chairmen of groups in their respective fields, adding that labor and industry is as one in working for the success of the objective:

The chairmen and the groups they will head are: Charles E. Wilson, presiden of the General Electric Co., Electrical; W. S. Faris, president, Standard Oil of New Jersey, Petroleum; Irving S. Olds, chairman of the board, United States Steel Corp., Steel; W. S. Carpenter, Jr., president, E. I. Dupont de Nemours Company, Chemicals; William Green and Philip Murray, presidents of the American Federation of Labor and the Congress of Industrial Organization, Labor; Guy W. Vaughan, president, Curtiss-Wright Corporation, Aviation; Donaldson Brown, vice president General Motors Corporation, Automotive; Thomas J. Watson, president, International Business Machines, Business Machines; James R. Hobbins, president, Anaconda Copper Mining Company, Metals (non-ferrous); Otway H. Chalkley, president, Philip Morris & Co., Ltd., Tobacco; Homer L. Ferguson, president, Newport News Shipbuilding Corp., Shipbuilders.

Money contributed to the campaign should be sent to Richard M. Tobin, General Chairman, Navy Relief Society, No. 2 McAllister Street, San Francisco. These funds will be sent to the headquarters of the Navy Relief Society in Washington to be used to care for urgent cases in the families of Navy men, Marines and Coast Guardsmen.

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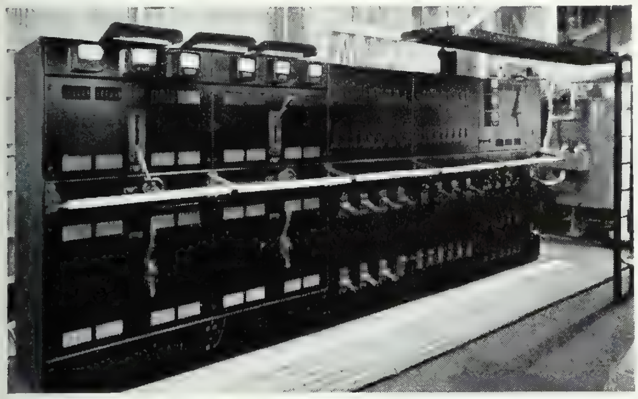

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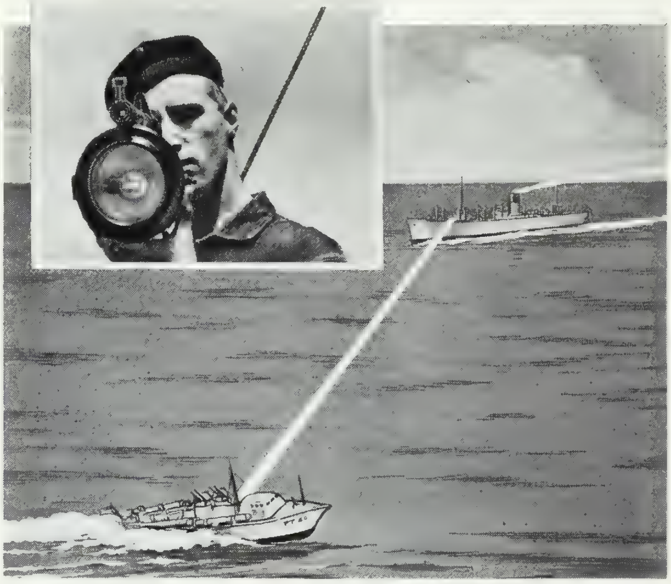

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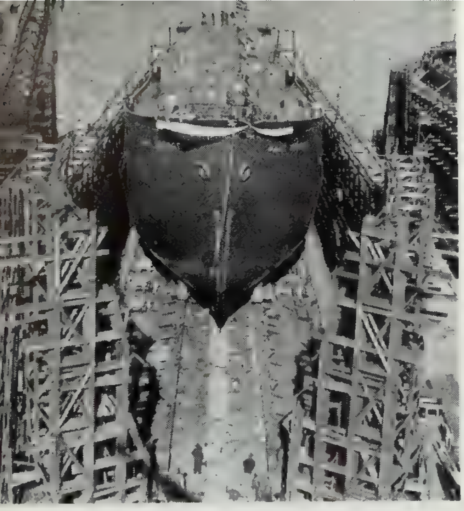

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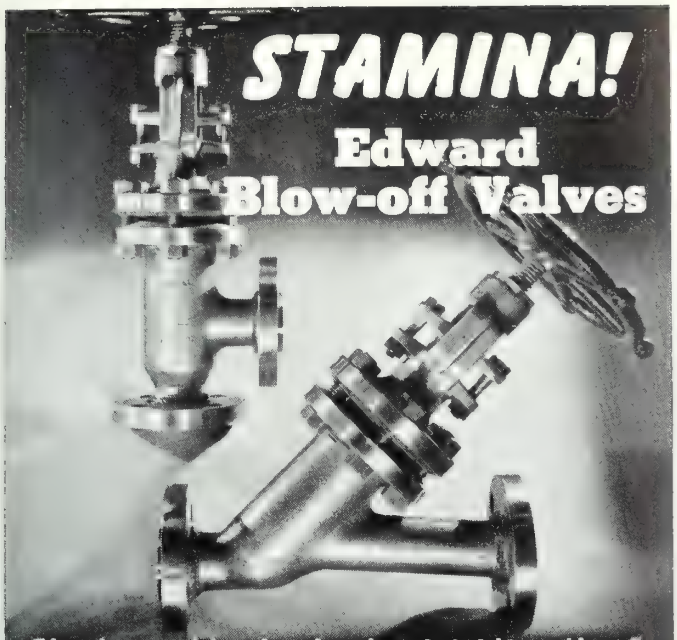

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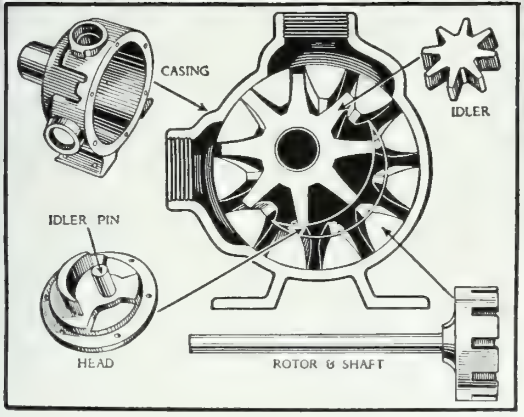

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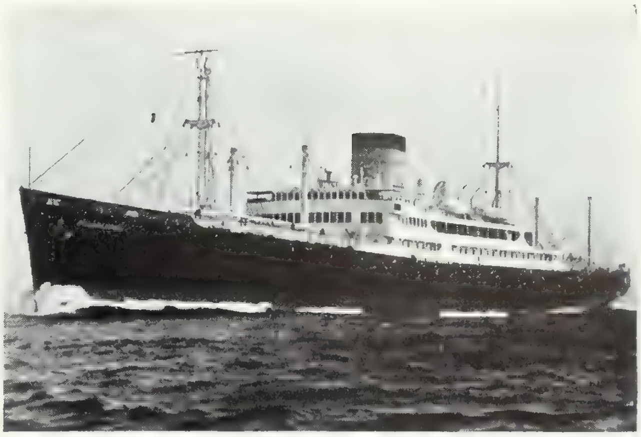

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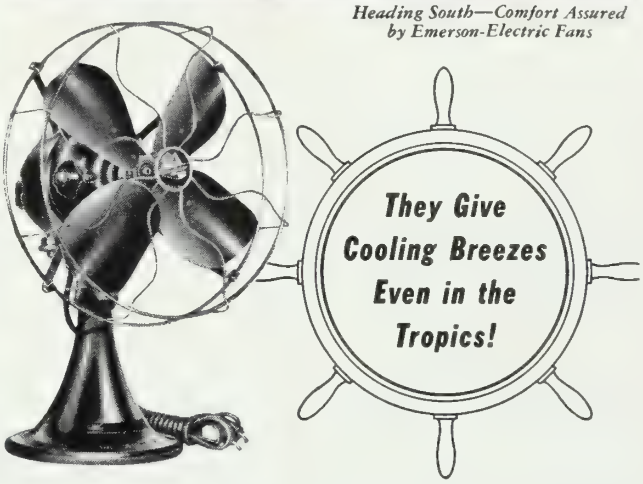

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General Manager: George B. Turnbull.
Naval Architect: Dwight True.
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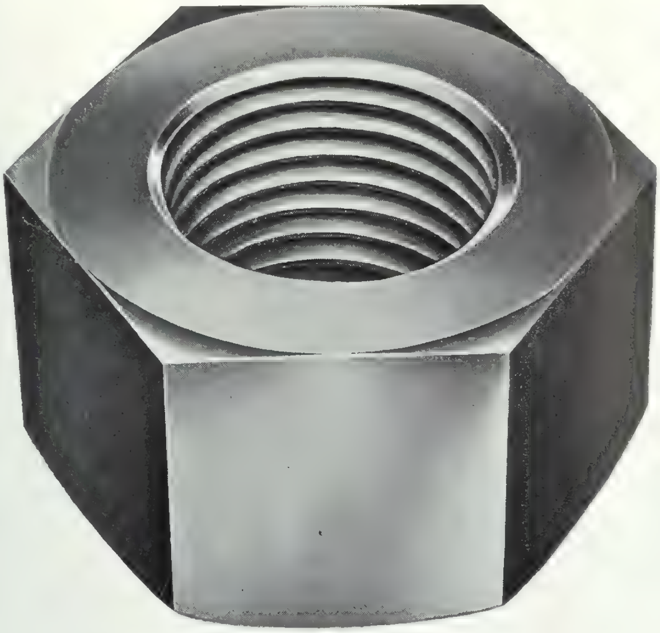

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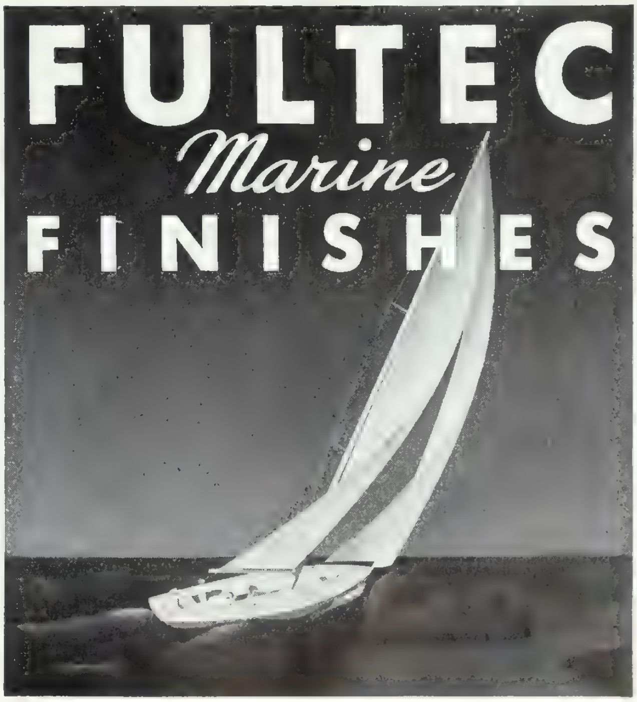

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Chief Electrical Engineer: M. L. Levy.
General Superintendent: Frank O. Higgins.
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Yard Superintendent: Joseph Harvey.
Purchasing Agent: Charles Pasciuti.

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General Manager: Edward Whiting.
Assistant General Manager: Bror Tamm.
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Manitowoc, Wisconsin

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Chief Engineer: A. P. Rankin.
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Manager of Sales: F. W. Ingraham.
Naval Architect: I. G. Volden.

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Chief Naval Architect: Thomas Vose.
Plant Superintendent: Swan Larson.
Purchasing Agent: Bryn Ostby.
Hull Superintendent: A. Halvorson.
Outfitting Superintendent: Wm. Bradshaw.

JOHN H. MATHIS CO.

Camden, N. J.

President: H. M. Robinson.
In Charge of Operations: E. W. Robinson.
General Manager: J. F. Smith.
General Superintendent: J. Boyle.
Chief Draftsman: J. Richartz.
Purchasing Agent: J. J. Williams.

MIAMI SHIPBUILDING CORP.

Miami, Florida

President: Theodore C. Buhler.
Sales Manager, Yacht Division: J. T. Pugh.
Purchasing Agent: T. C. Buhler.
Naval Architect: Dair N. Long.

MORSE BOATBUILDING CO.

Thomaston, Maine

President: Wilbur J. Morse.
Treasurer: Charles C. Bucklin.

NASHVILLE BRIDGE CO.

Nashville, Tenn.

President: H. B. Dyer.
Assistant General Manager: L. C. Anderson.
Erection Department: F. W. Blair.
Purchasing Agent: J. L. Bradbury.
Auditor: C. J. Hays.
Chief Engineer: L. O. Hopkins.
Supt. Nashville Plant: J. H. Anderson.
Supt. Bessemer Plant: William Rodgers.

NEWPORT NEWS SHIPBUILDING & DRYDOCK CO.

Newport News, Va.

President: H. L. Ferguson.
General Manager: J. B. Woodward, Jr.
Production Manager: W. E. Blewett, Jr.
Works Manager: E. F. Heard.
Purchasing Agent: H. K. Peebles.
Naval Architect: S. A. Vincent.
Director of Engineering: John F. Nichols.
Chief Engineer: Frank R. Benson.
Assistant Chief Engineers:
H. C. Berrian and Roger V. Terry.

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Camden, N. J.

President: J. F. Metten.
General Manager: Roy S. Campbell.
Naval Architects—
Construction: T. H. Bossert.
Design: E. H. Rigg.

NORTH CAROLINA SHIPBUILDING CO.

Wilmington, N. C.

PENNSYLVANIA SHIPYARDS, INC.

Beaumont, Texas

President: L. B. Coppinger.
Superintendent: L. C. Allen.
Purchasing Agent: C. E. Deakle.
Hull Superintendent: F. Perugi.
Construction Superintendent: B. A. Brown.

THE PUSEY & JONES CORP.

Wilmington, Del.

President and Gen. Mgr.: A. G. Spiegelhalter.
Charge of Sales: C. S. Lee.
Marine Manager: E. A. Hodge.
Naval Architect: D. J. Brown.
Purchasing Agent: H. W. Cornelius.
Chief Engineer: P. E. Ohlson.

RHEEM SHIPBUILDING CO.

Providence, Rhode Island

RICE BROTHERS CORP.

East Boothbay, Maine

President: William E. Rice.
Plant Superintendent: W. E. Rice.
Purchasing Agent: Henry W. Rice.

RICHARDSON BOAT CO.

North Tonawanda, N. Y.

President: Sidney S. Walcott.
Production Manager: James Nogle.

R. T. C. SHIPBUILDING CORP.

Camden, N. J.

President: L. M. Robinson.

SOUTH PORTLAND SHIPBUILDING CORP.

Portland, Maine

President: Wm. S. Newell.
In Charge of Production: T. R. Allen.
In Charge of Procurement: R. F. Hill.
General Manager: T. B. Pinkham.

SUN SHIPBUILDING AND DRY DOCK COMPANY

Chester, Pa.

President: John G. Pew.
New York Representative: John T. Borden (25 Broadway).
Purchasing Agent: H. W. Scott.
Chief Naval Architect: John W. Hudson.
General Manager: R. L. Burke.
Chief Engineer: G. McConechy.

TAMPA SHIPBUILDING CO.

Tampa, Fla.

TODD-BATH SHIPBUILDING CORP.

Bath, Maine

President: William S. Newell.
General Manager: Thomas R. Allen.

F. B. WALKER & SONS

Pascagoula, Mississippi

WHEELER SHIPBUILDING CORP.

Whitestone, N. Y.

WHEELER SHIPYARDS, INC.

Brooklyn, N. Y.

ZENITH DREDGE CO., SHIPBUILDING DIVISION

Duluth, Minn.

President: A. S. McDonald.
General Manager: S. G. Rockwell.

TRADE LITERATURE

Paint Spray Equipment: Catalog No. 80, a 32-page, 8½" x 11" booklet, just issued by the Eclipse Air Brush Company, Newark, N. J., covers their complete line of spray equipment for both manual and automatic operation, in addition to their Pneumix air-motored agitators for all mixing jobs in batches up to 200 gallons.

The introductory section of the catalog outlines the reasons for the low-pressure principle, under which all Eclipse spray equipment operates.

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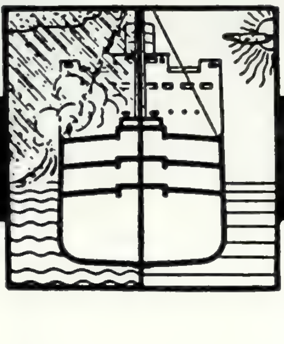

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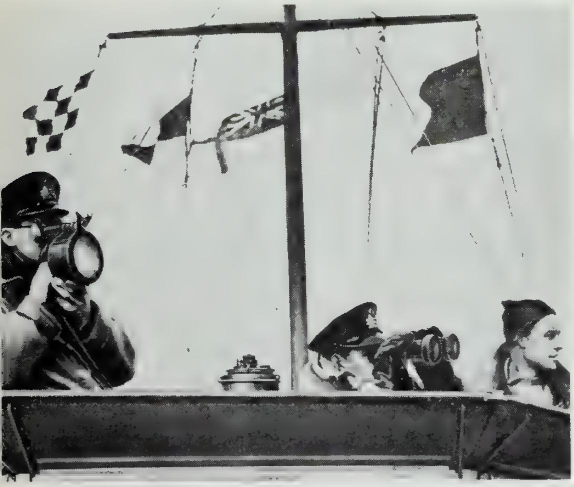
NEW YORK OFFICE - 75 WEST ST., NEW YORK, N. Y.

USE OF ALDIS LAMP for signalling on bridge of Norwegian destroyer (above). British destroyer (below).



Keep Posted!

Recent Development in Ship, Yard and Dock Equipment

Aldis Daylight Signal Lamps

An unnamed oil tanker was recently torpedoed and sunk off the Atlantic Coast. As the master swung overside into the last lifeboat, he picked up two black, wooden boxes which had been standing on the bridge.

Several hours later he heard the sound of motors overhead. An airplane—probably looking for him and his crew!

The day was murky—visibility poor—his lifeboat was the usual war-time gray. He sensed that to an airplane directly overhead, the boat and its cargo of men, would be invisible.

Quickly the captain tore open the cover of one of the black boxes, from it lifted a small, compact signaling lamp, and plugged the lamp into a storage battery—housed in the second black box.

Steadying himself against the gunwale he began sending a steady stream of rapid light flashes—dots and dashes—toward the airship. Suddenly the plane shifted its course and dipped towards them. After circling the boat, it pointed the way towards land. Within three hours they had been picked up and were on their way to safety.

Later, the plane crew admitted the flashes from the signal lamp were the only indications they had had, that a boat was below them.

This is only one of the many stories coming from all over the world, giving evidence of the services being performed by the Aldis Portable Daylight Signal Lamp.

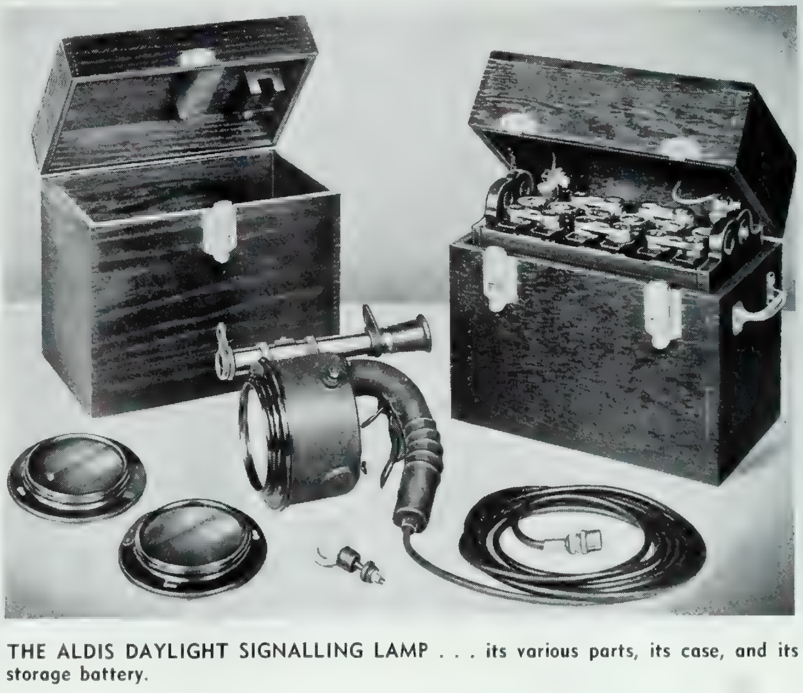
This lamp was developed by Aldis Bros., Ltd., of England, based on experiences in World War I. The telescope—a 4-power scope—was originally designed as a bomb sight by the Aldis firm, and now serves as a precise sighting device.

The basic principle of the Aldis lamp lies in a constant, fixed light—reflected into a movable mirror. Light is provided by a 36-watt, 12-volt bulb—firmly fixed directly in front of and exactly centered with an accurately ground, curved mirror. The mirror catches the light, concentrates it into a solid, straight beam. The beam is thrown outward towards the observer.

The signals, which can be prearranged or standard Morse code, are cast in the same manner as the sun heliograph. The mirror tilts the light beam into the observer's eyes, and then upwards, out of the observer's line of vision. Since the signals are mechanically controlled, a sharp and rapid dot and dash is afforded.

Concentration of the light beam reduces the possibility of detection by hostile observes to a minimum. The operator aims the lamp directly at the desired receiver. Another observer 6 degrees or more away from the angle of the beam cannot read the signals.

Constructed of cast aluminum, the lamp is light enough to be held in one hand for long periods.



THE ALDIS DAYLIGHT SIGNALLING LAMP . . . its various parts, its case, and its storage battery.

The lamp is mounted with a pistol grip and has two triggers. The switch is controlled by the lower trigger. The mirror is oscillated by alternately depressing and releasing the upper or reflector trigger.

With the lamp stored in one sturdy carrying case and the 12-volt storage battery in another, the entire outfit can easily be carried by one man.

The Aldis lamp can be successfully operated in broad daylight. The signal flashes can be seen up to ten miles in the sharpest sunshine. For daylight use, a clear front lens or screen is attached. For mist or fog, a red lens; for convoy or night use, a blue lens.

In addition to being used throughout the Royal Navy and Royal Air Force, the Aldis lamp is today in active usage with the following American groups: Pan American Airways; Agwi Lines; Socony-Vacuum Oil Co.; Pure Oil Co.; Royal Netherlands S. S. Co.; The Texas Co.; Standard Oil Co. of N. J.; U. S. Army Transport Service; Continental Steamship Co.; Furness-Withy & Co. It is manufactured in America by the Arnessen Electric Company of New York City under British Aldis patents and with the cooperation of Aldis Bros., Ltd.

Atomizing Deaerators For Petroleum Shipping Company

Each of the Petroleum Shipping Company's new tankers built by Sun Shipbuilding and Dry Dock Company—the Melbourne, Palembang and Wellington — are equipped with a Cochrane marine feed water deaerator of the atomizing type.

The design of the Cochrane marine deaerator permits the use of shells of various shapes to meet exacting space restrictions. There are the additional advantages that great flexibility in arrangement of accessory equipment and wide latitude in location of openings are afforded.

The principle of deaeration by atomization was developed expressly for shipboard use and insures removal of dissolved oxygen in feed water regardless of roll, pitch, or list of the ship.

New Plastic Cork Coating

After three years of research and tests under all conditions, the J. W. Mortell Company, Kankakee, Illinois, announce NoDrip, an improved plastic cork coating that stops dripping from condensation or sweating pipes, walls, ceilings, and tanks.

The first product of this kind introduced by this company for the same purpose was more limited in its use to large areas because it required power spray equipment to apply it. NoDrip has a greatly enlarged field, not only in industry but in the home and on farms, due to its easier and quicker method of application by using an ordinary paint brush.

NoDrip is spread ¼″ thick over metal, concrete, brick, plaster, tile, wood, composition, galvanized or painted surfaces, corners, angles or corrugated ceilings. NoDrip can be painted any color.

Complete information is contained in a new illustrated circular showing interesting uses of NoDrip.

Erecting Washington Iron Works Revolving Shipyard Crane on Outfitting Dock at Oregon Shipbuilding Corporation, Portland, Oregon.

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Revolving Shipyard Cranes are on the job! Doing their part in speeding up production of ships in leading shipyards.

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WASHINGTON IRON WORKS

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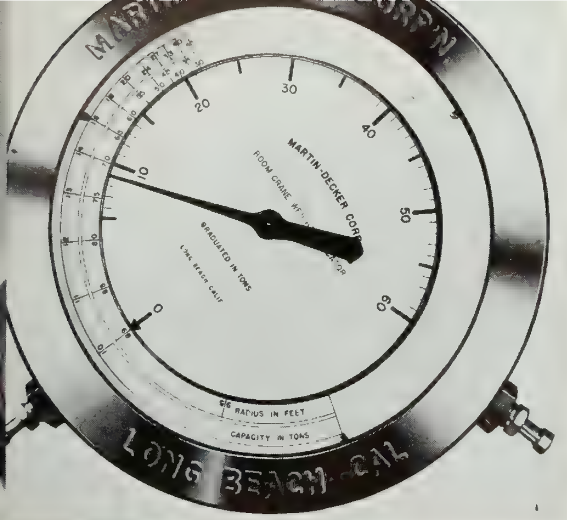

UPPER: The indicator dial.
LOWER: Cab of a crane with dial installed.

A Boom-Crane Weight Indicator

THE BOOM CRANE Weight Indicator fills a long-felt need for an instrument which would furnish accurate information as to the loads being handled with cranes. By the application of a Martin-Decker weighing device (which has long been used in the oil fields and other industries) to cranes, a weight indicator can be installed with a dial in the operator's cab, and this same instrument will show the radius of the boom and the capacity of the crane at that radius.

It is actually three instruments in one: A weight indicator, an angle or radius indicator, and a capacity indicator combined.

The boom crane weight indicator is simple in design, rugged in construction; the diaphragm and gage mechanism are identical to thousands now in use. It is sensitive to small load changes and accurate—and above all, dependable and safe. If it should fail, it will always fail "safe." This is an important feature.

How It Works

This instrument consists of a diaphragm pressure transformer, a high-pressure flexible, reinforced hose (bursting strength 20,000 pounds per square inch), an indicating gage, and a secondary hydraulic system consisting of a small reservoir, low-pressure hose and gage. Both gage mechanisms are installed in one case.

The weight indicator system is calibrated and sealed at the factory for easy installation on the crane. A diaphragm unit, or pressure transformer, is installed on the dead line of the block system just beneath the top stationary block.

The hose is run from the diaphragm unit down the boom to the gage in the cab. The diaphragm unit is so designed that when it is attached to a cable, a slight offset is placed in the cable. As loads are applied on the cable, the offset tends to straighten out. The tendency for the line to straighten out is resisted by the diaphragm supported by a column of fluid, thus line tension is converted into hydraulic pressure and transmitted by means of the high-pressure, non-expanding hose to the gage.

The secondary system is necessary to correct for the height of the diaphragm unit above the gage. Any change in the position of the boom produces a change in the hydrostatic pressure in the weight indicator system, and, if this pressure change were not corrected, weight readings would vary with changes in the position of the boom. A simple means of compensation consists of the reservoir mounted on the boom in fixed relation to the diaphragm unit. The reservoir is connected to a secondary gage tube and movement inside of the gage case, and to this movement is affixed a dial on which the load graduations are etched.

As the vertical position of the boom is changed, the hydrostatic pressure

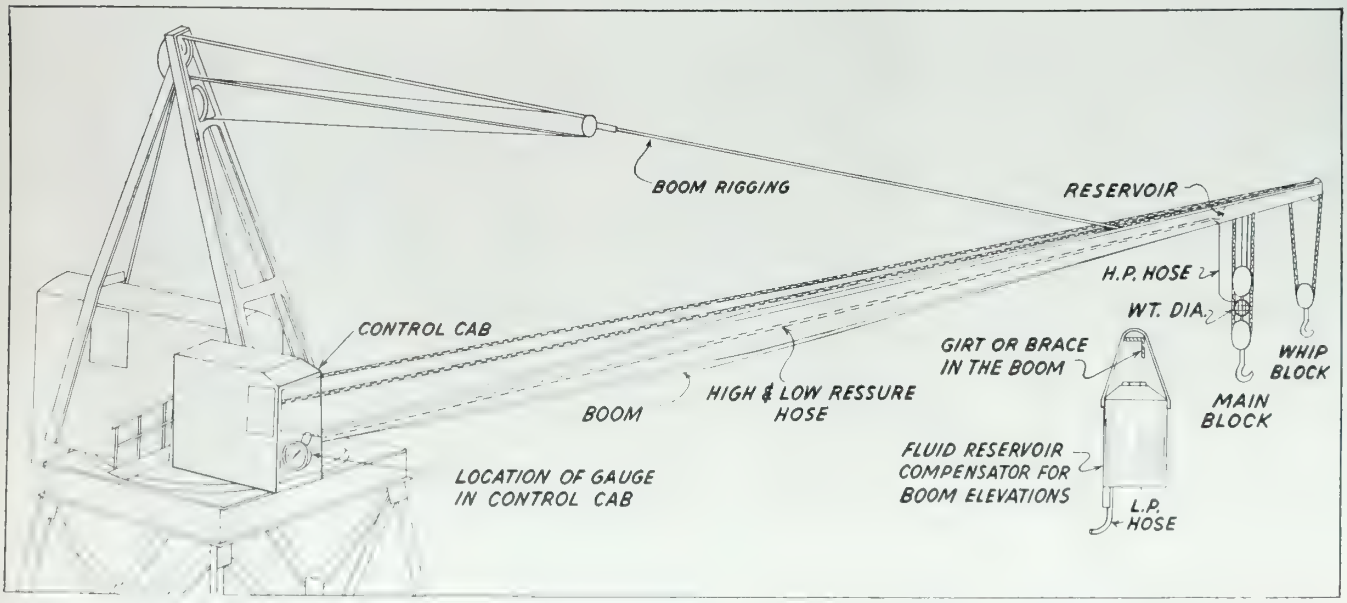

DIAGRAMA sketch sho method of inst tion of weight dicator on c boom.

change in the primary and secondary systems is identical; thus in action, when the boom is not loaded, the weight indicator gage hand and the zero position or arrow on the dial will always coincide regardless of the position of the boom. In other words, the no-load reading of the weight indicator hand will always be the zero position on the dial. As load is applied to the crane, the gage hand moves away from the zero on the dial to indicate in tons the amount that is being lifted at that particular boom radius.

As is shown in the illustration, an arrow etched at the zero position on the revolving dial is made to point to the radius of the boom at all times, and on this third dial is etched the rated capacity of that particular crane at various radii.

Temperature compensators in the weight indicator system automatically compensate for any pressure changes within the system caused by expansion or contradiction of fluid due to temperature change. Should either the primary or secondary systems develop a leak by accident, the result will be immediately shown on the gage by a change in the relative position of the gage hand and the zero point on the dial.

This gage shows the operator at all times the exact load he is lifting with the crane. Without experimentation, at a glance, he knows the exact position of the boom. Knowing that position and the capacity of the crane at that position, there should never be any doubt as to when excessive loading is being attempted.

The weight indicator will permit the operator to speed up the operation of the crane with safety.

The Martin-Decker Boom Crane weight indicator will aid in eliminating crane failure. If cranes are loaded according to capacities and the weight indicator is used to show the loads being lifted, there should be no further concern about tipping over cranes or occasioning crane failure with attendant injuries to personnel and loss of time.

The boom crane can be installed by anyone that can follow simple installation instructions. Little or no attention is required to assure long, accurate operation. Install the instrument—give it a 30 or 60 day inspection; otherwise, do not tamper with adjustments.

Almost twenty years of use in the oil industry and other industries wherever cables are used throughout the world has proved Martin-Decker weight indicators to be accurate, rugged and dependable.

A number of these indicators are installed on boom cranes at Pacific Coast shipyards. At one of these yards, several tests were made with the following results:

An engine bed plate and crank shaft with estimated weight of 35 tons was hoisted by a 50-ton crane, and the boom crane indicator gage dial showed 35 tons; a cylinder block which weighed 27 tons when shipped was lifted off a freight car and the dial read 27 tons; a load estimated closely at 12.85 tons caused the dial to read 13 tons; and another load estimated at 12.63 tons also showed a 13-ton reading.

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TEMP-A-TROL FORGE WELDER

New Welding Process For Heavy Plate

A welder in which the temperature at the weld itself automatically controls weld and heat-treat current and operating cycle, and which is completely self-compensating for all such variations as normal difference in metal thickness, induction and short-circuiting losses, and presence of scale, has been announced by Progressive Welder Company of Detroit, Michigan.

Designed for resistance welding of heavy sections and of special alloy steels—such as homogeneous and face-hardened armor plate, and for shipbuilding—the new Progressive "Temp-A-Trol" forge welder both spot-welds and heat-treats the weld. Close control of weld nugget size, ductility and grain refinement are thus obtained. It is said that the welder also avoids annealing of hardened surfaces in plate.

This new forge welder is the first and, so far as is known, the only spot welding method approved by recognized bureaus for such purposes.

With completely automatic control of weld, heat-treat and annealing cycles, the human element in selecting weld and heat-treat cycles is reduced to a mere setting of the dials to the actual temperatures desired.

Another advantage of controlling welding current and cycle through weld temperature, rather than by the conventional manual setting of current and time regulating controls, is that it provides automatic compensation for current loss due to varying amounts of the work introduced in the throat of the welder. As this increases, the current loss due to induction increases, causing a variation in the actual amount of welding current—almost impossible to compensate for accurately by means of manual controls.

Again, this method of control compensates for current loss through adjacent completed welds by automatically increasing the current to compensate for this loss.

Both of these advantages are particularly important in connection with the welding of heavy plate, such as armor plate in shipbuilding.

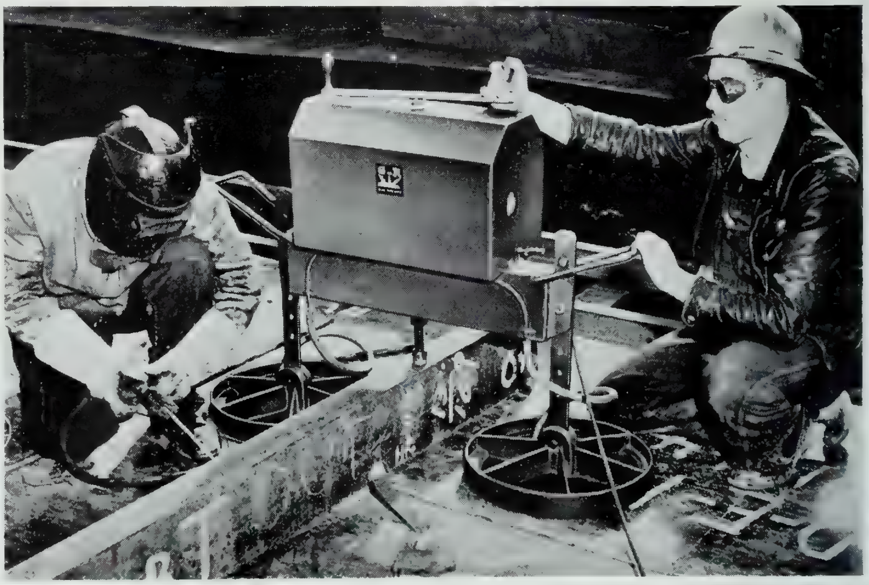
Basic patents on the "Temp-A-Trol" process have already been granted and additional patents are now pending.

At present, detailed information on the new process will be furnished by the Progressive Welder Company only to organizations engaged in or contracted to engage in war production work.

Vac-U-Clamp A New Hold-Down

The Glen-Roberts Company of Oakland, California, have developed a very convenient and time-saving hold-down device for clamping stiffeners to plate in welding construction.

This device, marketed under the trade name Vac-U-Clamp, comprises a heavy steel bar adjustably mounted on two steel legs, which are each mounted on an 18-inch diameter rubber-gasketed steel disc. These discs are each connected by flexible tubing to a vacuum pump mounted on top of the steel bar. Through the center of the



VAC-U-CLAMP HOLDER-ON for welding stiffeners to plates.

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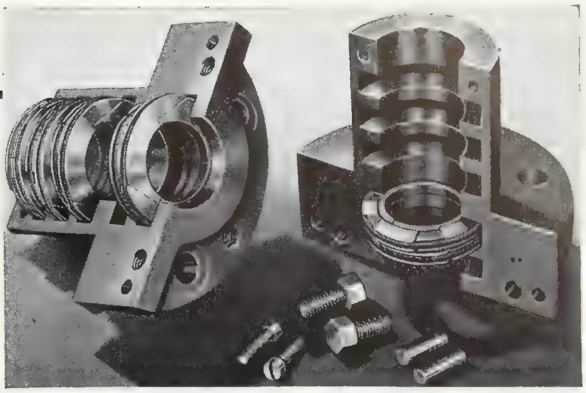

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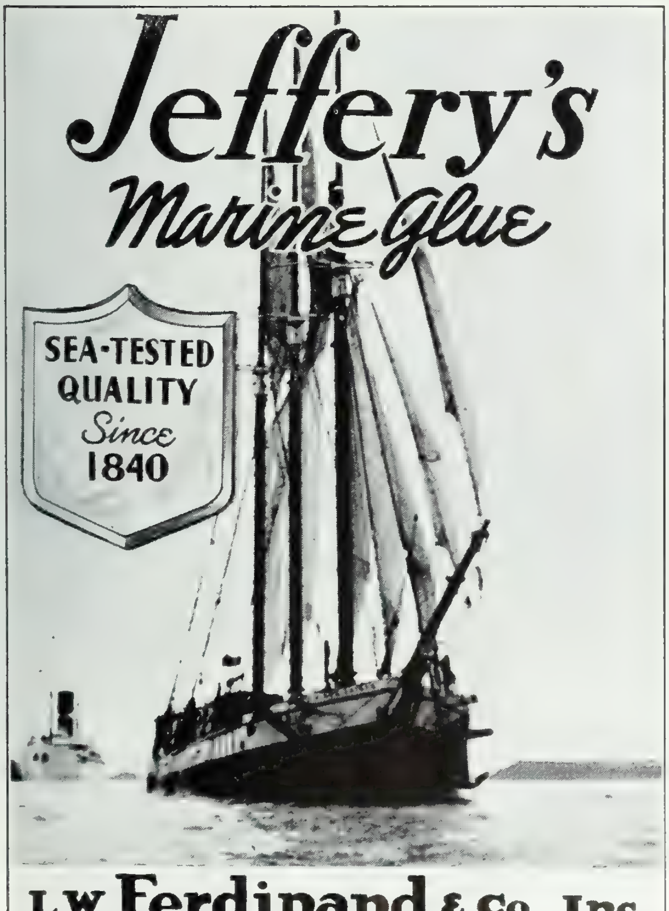

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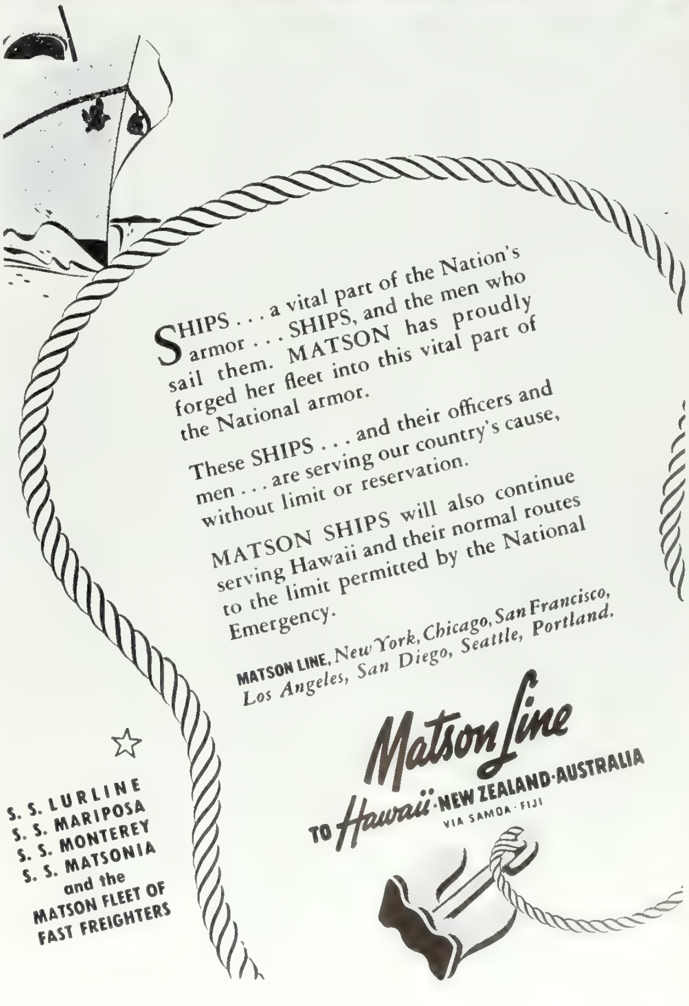

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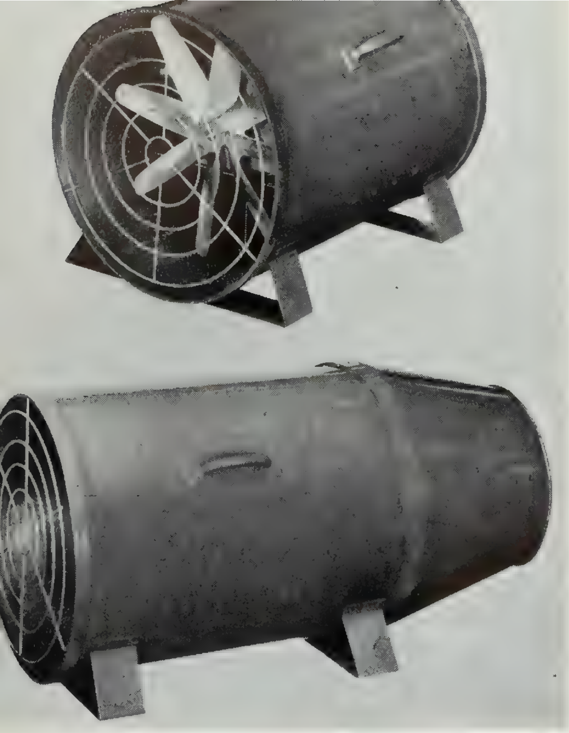
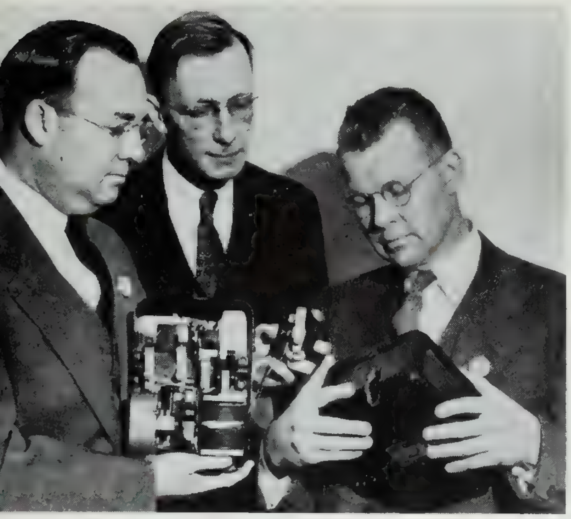


UTILITY shipbuilding ventilation units. Lower, units fitted with transition adapter.



G. E. EXPERTS examining shell-shocked contactors.

SEA HAWK Hot-Point galley range

bar a screw clamp is mounted and is operated by a horizontal hand crank.

In operation, the vacuum disc feet clamp to the plate under atmospheric pressure, and the screw clamp is brought down on top of the stiffener. Five thousand pounds pressure is easily applied on the screw without disturbing the attachment of the discs to the plate.

A flip of a three-way valve releases the vacuum for instant detachment and removal to a new hold. The entire device weighs only 135 pounds.

It is claimed that in actual production tests in San Francisco Bay shipyards, the output in satisfactorily welding heavy stiffeners to heavy plates has been increased over 400 per cent by the use of the Vac-U-Clamp.

Contactor Survives Machine Gunning

Damaged recently on a freighter machine-gunned in the Mediterranean, a G-E magnetic contactor, nevertheless, kept the vessel's radio equipment operating until the freighter docked in New York. The contactor was installed in the radio room, and, during the attack, the radio operator was wounded; one bullet made a jagged hole in the contactor cover, shattered the asbestos and Textolite bases, and cut the resistor wires deeply.

Inspecting the contactor, which is now back at General Electric's Schenectady plant, honorably discharged from service, are, left to right, E. H. Alexander, J. C. Diefenderfer, and W. J. Stock of General Electric's industrial control division.

The Sea Hawk Hot-Point Range

Primarily designed for use on auxiliary naval vessels, mine sweepers, and sub-chasers, the newest addition to the Edison-Hotpoint line of electric galley equipment is the Sea-Hawk, a range that is meeting with enthusiastic reception from builders of merchant ships as well.

Built in sections for easy assembly through narrow companion-ways, it is thirty-six inches wide; of standard 35-inch height, and is equipped with sea-racks and guard rail. Built to naval specifications, it represents the ideal equipment for the close quarters of a ship's galley. Surface cooking and oven baking and roasting are made simple and easy.

An important consideration in installing electric galley equipment is the freedom from fire hazard—a constant menace in galleys where flame-type cooking devices are employed. The new Edison-Hotpoint Sea-Hawk has a connected load of 21.9 kw and is catalogued as the R179-115 volts, dc.

Utility Shipbuilding Ventilation Unit

Designed for use where workers operate welding or other equipment in confined areas, Utility Fan Corporation has developed a lightweight unit to be placed over deck-plate breather holes to exhaust fumes, or, by merely reversing position of the unit, force fresh air into the confined area. It is all-welded of heavy 18-gage steel with reinforcing bands to withstand the roughest treatment. A guaranteed one-horsepower electric motor insures against overload and burn-out, gives economical operation, and is started with splash-proof, approved type switch.

The whole unit weighs less than 90 pounds and is 18 inches in diameter to fit usual deck-plate breather holes or manholes. The fan is eight blade, cast aluminum, propeller type delivering 7000 cubic feet of air per minute. There are heavy wire safety guards both front and rear. A transition adapter for attaching flexible or fixed duct is optional equipment.

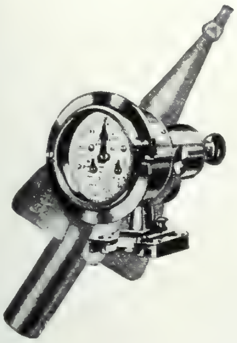
Naval Hospital On Treasure Island

Plans to commission the naval dispensary at Treasure Island as a U. S. Naval Hospital were announced recently by the Twelfth Naval District.

Additional expenditure of $500,000 for new structures will augment present facilities now housed in the building known as the Los Angeles County Exhibit during the 1939-40 Expositions. This structure has been completely remodeled and has a normal 125-bed capacity.

When completed, the structures will provide 500 beds, serving the Northern California patrol forces, San Francisco section base personnel and evacuated hospital cases.

THE IDEAL TAFFRAIL LOG



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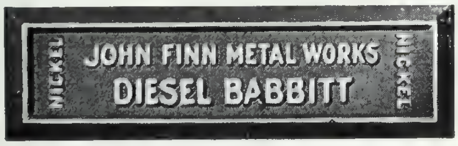

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ON THE WAYS

(Continued from page 70)

Navy Launchings On Pacific Coast

In South San Francisco, March 6, the U. S. S. Hamlin, a C-3 type cargo vessel, was launched at the Western Pipe and Steel Company. The ship will be converted to a naval auxiliary, according to the Twelfth Naval District, and will be designated for an aircraft squadron.

On March 7, the Hubbard's South Coast Company, Newport Beach, California, launched the mine sweeper YMS 91 and at the same time was presented with the Navy "E" pennant by Rear Admiral Charles Blakely, former commandant of the Eleventh Naval District.

The first of 25 destroyers under construction at the Seattle plant of the Seattle-Tacoma Shipbuilding Corp. was launched on March 8.

On March 14, the submarine U. S. S. Whale was launched at the Mare Island Navy Yard, eleven months ahead of schedule. Speaking at the launching, Rear Admiral W. L. Friedell, yard commandant, stated that with all the records this yard had made "none so far has ever approached the record here set."

Tug Handles Three Jobs on Launching Day

The all-welded seagoing tug, Joseph M. Walsh, was placed in commission Tuesday, March 17, St. Patrick's Day (and handled three jobs that day). There is an old saying, "The better the day, the better the deed," which if true, should cause good fortune to attend her career. The Joseph M. Walsh (Hull No. 228) was the first to be launched of three all-welded tugboats which were built by the Alabama Dry Dock & Shipbuilding Company for the Mobile Towing and Wrecking Company.

Oregon's Launching Speed Causes Name Problem

"Wire us a new list (of names) at once," was the appeal sent on March 1 to the Maritime Commission at Washington from the Oregon Shipbuilding Corp., which had exhausted its list of ships' names with the christening of the 18th Liberty ship, S.S. John Hart, on that day.

The Oregon yard being way ahead of schedule caused the Maritime Commission an immediate problem, which they apparently solved, as up to March 22 the corporation has launched and christened four Libertys, the last of which was the S.S. Robert G. Harper, launched on March 22.

Defoe Adopts More Fitting Name

After February 1, the Defoe Boat & Motor Works' name was changed to Defoe Shipbuilding Company, which more accurately describes their operations of steel ship construction which they have been doing since World War I.

When the company was organized 36 years ago, it was planned to build small boats and marine motors, but, according to an announcement sent out by the company, the small boat business was discontinued during the first decade, and it further stated, "We have never manufactured marine motors and our name has never really fitted our business." It will operate under exactly the same management as heretofore; only the name has been changed.

Construction Speeded For New Portland Yard

Construction on the $15,000,000 Swan Island shipyard, Portland, Oregon, was given the go-ahead signal on March 10 by the U. S. Maritime Commission after agreement was reached with the Port of Portland Commission for a three-year lease. Government officials also agreed that the yard would be dismantled after two years of inactivity.

Another C-2 From Federal Ways

Mrs. W. Creighton Peet, wife of the Secretary of the United States Maritime Commission, was the sponsor of another C-2 cargo vessel launched by the Federal Shipbuilding and Dry Dock Company, a subsidiary of United States Steel Corporation, at 11:25 a.m. March 18.

The ship, christened the U.S.S. Oberon, is under construction for the United States Maritime Commission, and upon completion will be transferred to the Navy Department.

The Oberon is the 27th merchant vessel which the Federal Shipbuilding and Dry Dock Company has launched for the Maritime Commission as part of the Commission's long-range merchant shipbuilding program. The vessel will be propelled by means of high-pressure steam turbines.

Keel-Laying for "Coasters"

The Pacific Bridge Company, San Francisco, laid two keels late in March for the first two "coaster" type ships, which were awarded the company last fall.

Originally these ships were to go to England under Lend-Lease provisions, but recently this was changed. The vessels will now be used for American trade.

S. S. Kvichak To Be Rebuilt as Troop Carrier

Wrecked in Queen Charlotte Sound, Alaska, January, 1941, the Army ship Kvichak will be rebuilt by the Winslow Marine Railway & Shipbuilding Co. as a troop carrier and cargo ship. The contract specifies completion within four months; the cost will be $357,070.

It was built in Portland, Oregon, in 1900 for the Alaska Packers Association.

British Get C-3

The S. S. Tracker, launched early in March at the Tacoma yard of the Seattle Tacoma Shipbuilding Corp., will be converted into a small aircraft carrier for the British, the first ship so far built in the Northwest for England.

1456 Liberty Ships To Be Delivered by 1943

Although Liberty ship production is now on schedule, the U. S. Maritime Commission stated that its 1942-43 goal of 1456 Liberty vessels would be attained only if there were no work stoppages or materials bottlenecks. This huge program was announced on March 19, when the Commission described the work of American shipyards as the "greatest emergency shipbuilding effort in history."

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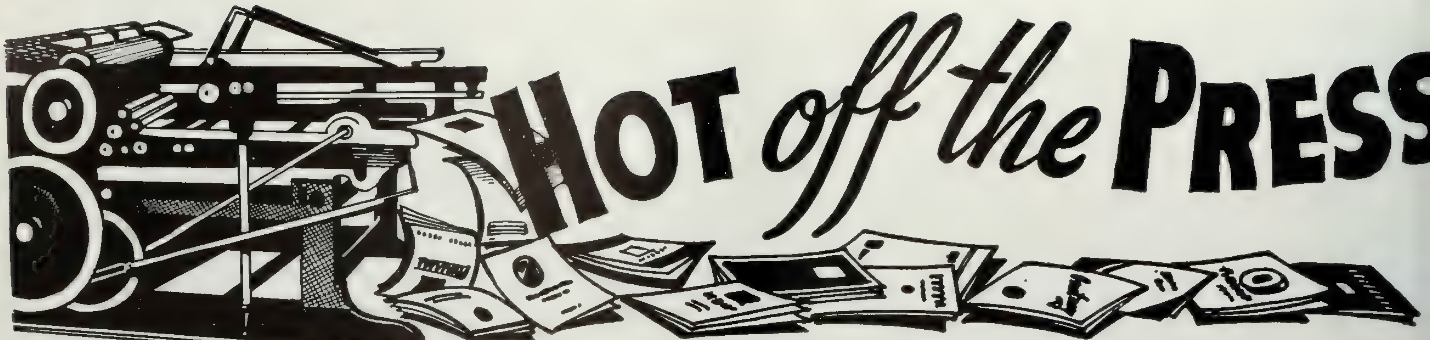

HOT off the PRESS

The Catalogs of Today Become the Technical Handbooks of Tomorrow

"Caterpillar" Diesel . . On Guard!, is a 32-page punch-packed booklet (Form 7283) that pictures and relates the part played in the victory program by Caterpillar Tractor Co., Peoria, Illinois.

It paints a graphic picture of how products—which helped build the things worth fighting for—are now protecting these same things against those who would push freedom around.

Airport Lighting and Distribution Equipment. A new 42-page bulletin is announced by Westinghouse Electric and Manufacturing Company for use in airport lighting design. Covering all the lighting and electrical distribution equipment involved in the layout of an airport, this bulletin was prepared in collaboration with the C. A. A. and has their full approval.

Typical layout plans with C. A. A. recommendations are given for airports with runways of from 1500 to 4500 feet. Distribution facilities described include circuit breakers, transformers, relays and cutouts. Control panels with floodlight and contact light control are outlined to show physical position of important parts.

Photographs and brief descriptions of all the necessary floodlights, beacons, contact and boundary lights are included with references to complete literature covering each item.

Special feature of the bulletin are full-size, black and white photostats of typical lighting wiring diagrams for the four airport classes. Field and distribution vaults, bus ducts, control circuits, and a bill of material are shown in each case.

Prestite, a porcelain for molding to intricate shapes of which electrical and mechanical properties must be high, is described in a new four-page leaflet (B-3100, Dept. 7-N-20), announced by the Westinghouse Electric and Manufacturing Company.

Twenty-five questions and answers cover the important points that might be raised by the prospective user of this material. Some of these are strength, weight, expansion, maximum sizes, and dielectric strength.

Prestite is one of the few materials for which no priority is necessary. The steel used in the original molding die does necessitate a priority rating.

A copy of leaflet B-3100 may be secured from department 7-N-20, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

Electric Gaging. This booklet, GES-2543, recently issued by the General Electric Company, tells in interesting, concise fashion of eleven outstanding instances where savings in both time and money, and at the same time improved quality, have resulted from the application of extremely sensitive yet sturdy electric gaging equipment.

The booklet illustrates such electric gages as the strain gage, pressure gage, film-thickness gage, eccentricity gage, profile gage, electrolimit gages, and the tensiometer. Applications for each are also suggested.

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Box 317
Pacific Marine Review

New Service for Seamless-Tube Buyers. The Seamless Steel Tube Institute, Gulf Building, Pittsburgh, Pa., announces the establishment of a new service whereby purchasers may obtain information on the availability of various grades and sizes of seamless steel tubing for new or special wartime requirements.

The formal announcement of this service follows numerous requests for such information received by the Institute in recent months. It is hoped that notice of the Institute's willingness to cooperate with tube purchasers in this manner will facilitate purchases and expedite deliveries of this important class of material.

Making Rope Last Longer is now being distributed in large quantities by the Plymouth Cordage Company, North Plymouth, Massachusetts.

This booklet is being distributed free, and will be supplied in quantity, upon request, to any business in a position to conserve the use of the country's supply of rope.

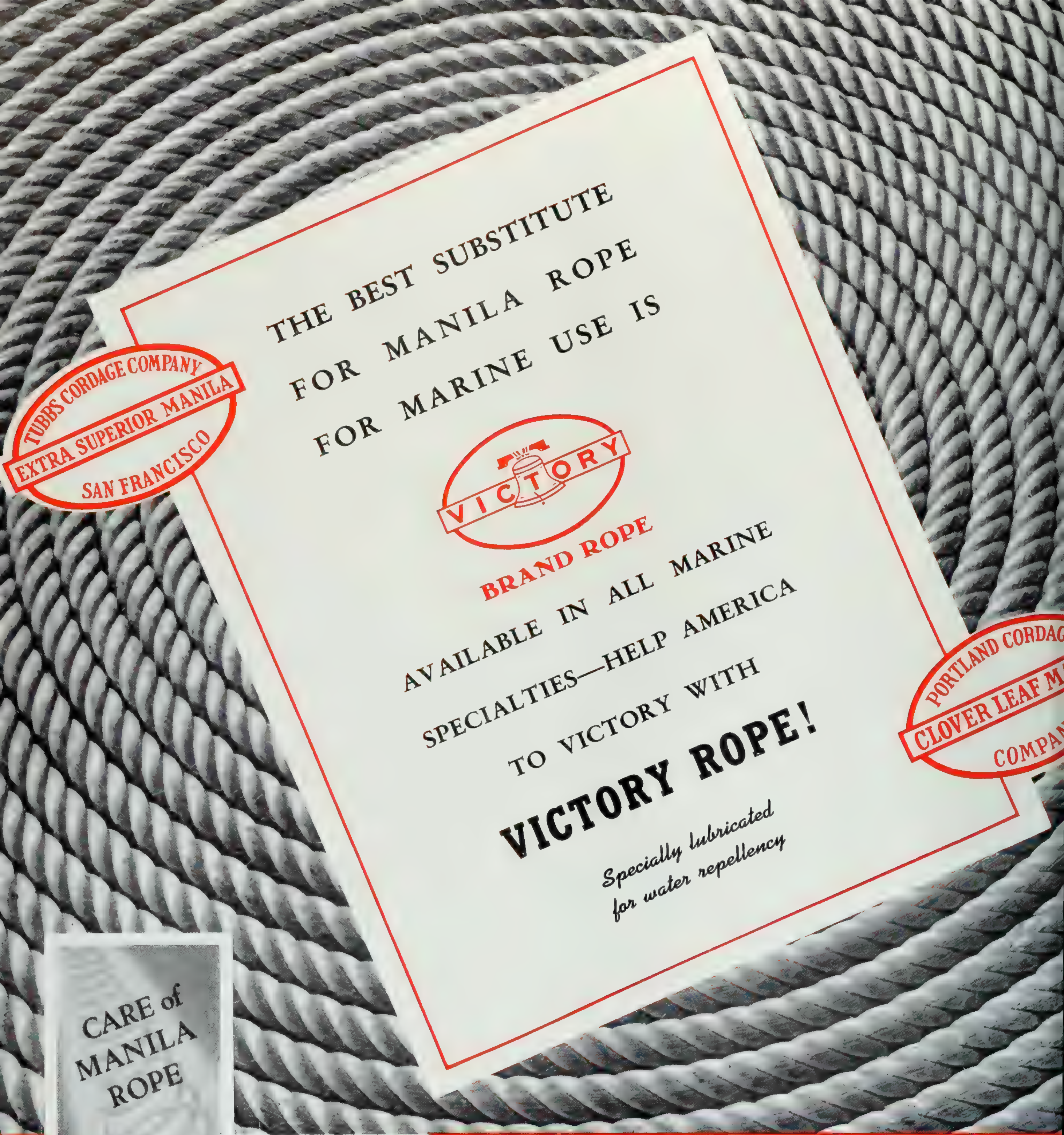
Included are timely suggestions for making rope go farther, through greater care in using and storing.

Load-Center Power Distribution, a new 16-page, two-color booklet (GEA-3758) published by General Electric Co., that explains the basic principles of load-center power distribution for industrials, naval and military projects, shipyards, central stations, and commercial buildings. This bulletin lists the chief advantages of the system.

Pacific MARINE REVIEW

UNITED STATES
MARITIME COMMISSION

May, 1942



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Pacific MARINE REVIEW

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Official Organ

Pacific American
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Shipowners Association
of the Pacific Coast

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Pacific Marine Review

Editorial Comment

We are Meeting the Test

by DONALD NELSON
Chairman W.P.B.

WE ARE BEGINNING TO get in America today one of the most encouraging things any American could hope to see—a genuine, whole-hearted spirit of cooperation between big business, little business, labor and Government. Labor unions have voluntarily given up privileges and rights which they fought years to win; business has voluntarily given up chances for high profits which it might legitimately have taken; both sides, to an increasing degree, are showing a desire to forget their own interests and work with each other and with the Government in order to win this war. It is an immensely encouraging development.

And it is coming at a time when we can see daylight ahead in our whole war-production effort. We are over the hump on war production. Today, the combined production of America, Russia and England undoubtedly is greater than the combined Axis production.

That does not mean that we are going to win the war next month, or that we can start out tomorrow to take the offensive, of course. Japan began piling up armaments as far back as 1930; Germany started in 1933. Each nation built up an enormous reserve of arms and munitions, to which has been added the booty seized in conquered countries. But I believe it is safe to predict that by the end of the year we will have overcome that reserve and will from then on have our enemies at an increasing disadvantage.

America today is supplying all the world outside of the Axis and its conquered countries with critical raw materials. To a large extent, it is also supplying our allies many of the finished and semi-finished goods needed for war production and the proper operation of a civilian economy. In addition, it is supplying a very large part of the actual arms and implements of war. And on top of all of this, of course, America is arming itself for a titanic fight in all quarters of the globe.

Our engineering and designing skill was always concentrated on producing goods for peace, not for war. But in less than two years, time, we have re-oriented the whole machine—and right here I want to pay my tribute to American industrial leadership for a truly magnificent job.

The skill, the ingenuity, the "know-how," which in past years gave us more and cheaper goods for peace, and made our living standards the highest in the world, are today being used to give us better goods for war.

From the executives and planners in the front office, down through the engineering and designing staffs to the workers at the machines, industry is responding to this challenge. Tricks and short-cuts that once gave us an increased output of luxuries and conveniences are now being just as effective in boosting our production of weapons.

We are going to have enough materials to meet our war goals—but we aren't going to have much left for civilian goods. We are meeting the demand for tremendous war production by taking factories, machines and workers out of peace production. Our standard of living is certainly going to be substantially lower, for the duration of the war. We are making tanks instead of autos, guns instead of electric refrigerators.

Our free institutions are meeting their supreme test.

Unwise Taxation A Form of Sabotage

A total of 139 tax days are listed for the tax payers of California in the 1942 tax calendar recently issued by the California Manufacturers Association. This figure compares with fourteen tax days in the peak business year of 1929.

While the Federal Government names only thirty-five days in its all-out program to win the war, the State of California lists ninety-three days on which some tax is due in getting money for its operations. The cities and counties list an additional nine days for their tax purposes.

As we analyze the calendar, we find that industry is carrying the bulk of the state and local tax load. It is a situation in no way conducive to war-time efficiency. Obviously, if industry is to survive, much of the tax load must be passed along to the public and this is done in higher priced merchandise and service. So the consumer is likewise affected.

In these perilous times, the tax maker should recognize that unwise and unnecessary taxes function not unlike a fifth columnist in blocking the war efforts of business, industry and the public. The listings in the 1942 tax calendar would seem to call for some very careful scrutiny.

Somewhat indicative of the general tax activities, the February calendar lists several motor vehicle tax days, fuel tax days, an alcoholic beverage control day, special business report days and a day for insurance contributions.

W. S. A. Requisitions All Merchant Ships

ADMIRAL EMORY S. LAND, Administrator of the War Shipping Administration, announced on April 18 that the War Shipping Administration has requisitioned possession and use of all essential ocean-going tankers and dry cargo vessels owned by American citizens which are subject to requisition under the Merchant Marine Act, 1936, as amended, and which had not been previously acquired by the Government. Such requisitions will become effective as of the time possession is taken by the Government. This action affects several hundred vessels.

This action is simply a formal statement of the condition already existing. All tonnage has been operating subject to the control of the W. S. A. since the formation of that bureau.

Immediately following this announcement, came the completion of the district organization of W. S. A. A Pacific Coast District of W. S. A. had previously been established with John E. Cushing as director.

The Coast District directors will have overall supervision in their areas of all shipping operations of both agencies and will report to Washington.

Captain Granville Conway has been named director of the Atlantic Coast District, which consists of all United States Atlantic ports north of Florida, and includes Maritime Commission and War Shipping Administration activities in Canadian and Newfoundland ports. Captain Conway will continue as District Manager for the Commission and the Administration at New York will make his headquarters at 45 Broadway, New York City.

Chester H. Marshall has been designated as director of the Gulf Coast District, which includes all United States ports on the Gulf of Mexico and all ports in Florida. Mr. Marshall will make his headquarters at the Federal Office Building, New Orleans. Prior to his appointment, Mr. Marshall was operating manager at New Orleans for the Waterman Steamship Corporation.

This organization places the three-ocean coastal districts of the United States under the direction of experienced and capable shipping executives who know the problems involved and should be able to produce efficient and effective operation from the fleets based on their district ports.

District Shipbuilding Control

THE DECENTRALIZATION of shipbuilding control as put into effect by the Maritime Commission, effective May 1, is a very sensible move and should result in the saving of much time and worry for the shipbuilder; much money for the taxpayer; and above all more ships in less time for our all-out war offensive.

As announced in April PACIFIC MARINE REVIEW, the Maritime Commission has divided the nationwide merchant shipbuilding program into four districts. These cover: first, the Atlantic Coast, north of Florida, with headquarters in Baltimore; second, the Gulf Coast, including both coasts of Florida, with headquarters in New Orleans; third, the Pacific Coast, with headquarters in Oakland, California; and fourth, the Great Lakes, with headquarters in Chicago.

Each of these districts will be under the direction of an executive well experienced in the policies and techniques of the Maritime Commission. Complete regional offices are being set up, and it is expected that the office force in each case, together with the shipyard inspection force in the area, will approximate a force of 400 persons.

Each office will, for its own district, represent several sections of the Technical and Construction Division of the United States Maritime Commission including:

The Inspection Section;
The Hull Plan Approval Section;
The Cost Analysis Section; and
The Cost Approval Section.

The Pacific Coast has perhaps more to gain from this decentralization than any of the other areas, because of the distance handicap that will now be eliminated.

C. W. Flesher, the Construction Director for the Pacific Coast area, is already at work, holding conferences, making decisions. He has jurisdiction over every Maritime Commission ship construction contract on the Pacific Coast.

In an interview with the publisher of PACIFIC MARINE REVIEW, Mr. Flesher expressed himself as being on the job to help Pacific Coast shipbuilders increase their deliveries. The main objective now is to get more tonnage to carry cargoes of war materials.

"Merchant shipbuilding," says Flesher, "is our second line of offense. In this world-wide war of far-flung battle lines, the ships assume a greater importance than ever before. As Admiral Land puts it, 'This is a war of ships'."

As he conceives his office, Mr. Flesher will be able to do much toward solving many of the production problems of the Pacific Coast yards. These problems are largely due to matters such as delayed deliveries of materials and equipment, delayed decisions on design details and alterations, delayed agreements as to costs and accounting methods.

Under the present set up, such matters will be settled promptly by the regional Director of Construction. This is an immense improvement. Formerly, such questions had to be submitted to Washington, where in the natural course, they were largely lost in the crowd, and in any event were decided by minds that were trying to make policy decisions for the entire program. Now with the regional director on his toes to make the best record for his district, these questions will have immediate attention from an organization whose sole duty is to expedite decisions in the interest of greater ship production.

This organization will act also as an expediter and coordinator of shipments of materials and equipment to the yards of its own district. Everything humanly possible will be done to bring materials and supplies to the yards in sufficient quantities and in proper sequence to meet and to increase the schedules.

The Pacific Coast District Ship Construction Director will be a busy man. His district stretches from National City, California, to Seattle, Washington. He is the coordinator, controller, and supervising architect and engineer for some fourteen shipyards with some 76 shipbuilding ways. He expects to bring all these yards up to the measure of efficiency now shown by the best of them, and then to improve them all. He hopes to see each of these yards flying the U. S. M. C. Pennant of Merit, awarded for superior efficiency in constructing ships.

When these yards and ways are all in production, the 10,000-ton Liberty ships should be delivered at a rate better than one a day in this Pacific district. With the "coasters" and standard C type vessels, the total schedule will bring deliveries close to two merchant vessels every 24 hours.

This is a gigantic program. To properly coordinate, expedite and decide for such a program is a tremendous job. Carl W. Flesher impresses us as the man to do that kind of job, and we believe that he and his organization will be of immense benefit to the shipbuilding industry on the Pacific Coast.

ALDEN G. ROACH
President, Consolidated Steel Corporation, Ltd.

Consolidated Completes New Shipyard

AMERICA'S WAR production made another big stride forward with the completion of Consolidated Steel Corporation's new six-million-dollar shipyard at Wilmington, California. There were no brass bands marking the event—but the noise of riveting made a fitting wartime substitute.

Eight hulls are already under construction on the eight shipways.

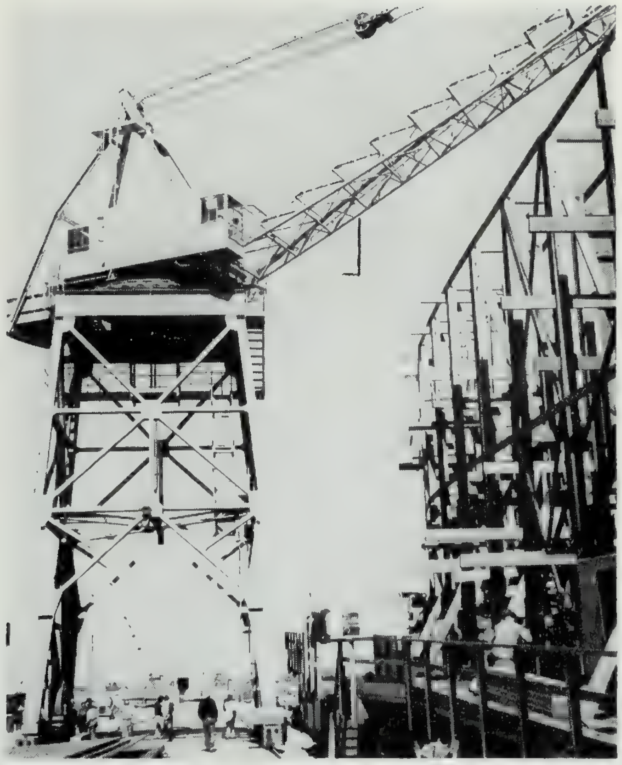
The 95-acre area was converted from an expanse of mud flats into a booming shipyard in a little less than eight months. Approximately 40,000 piles were driven into the tide lands to support the tremendous weight of the shipways and the twenty-eight buildings and warehouses which house the operations. The yard boasts over a half a mile of docks, and three miles of railroad track, over which locomotives haul the materials which go into the thirty ships which are to be built at Consolidated's new shipyard.

The ships, all of one type, are to be C-1 cargo-passenger vessels, identical with the four which Consolidated have already launched and delivered from their Long Beach shipyard. These four have the following characteristics: They are 417 feet long; have a beam of 60 feet, and a molded depth of 37 feet 6 inches. They are full scantling in design, contain 8 cargo holds, and have a displacement of 12,900 tons. Besides cargo, they also have comfortable accommodations for 12 passengers.

Each of the shipways on which these vessels will be built is equipped with preassembly skids, steel racks, and gantry cranes. These shipways are large enough to provide temporary storage space for assembling inner-bottom units, thus clearing the skids for further assemblies such as bulkheads or deck plating. Each way has its own offices, wash rooms, and time clock stations.

The layout of the shipyard itself bespeaks speed and efficiency, which is

GENERAL VIEW OF WAYS ACROSS PREASSEMBLY SKIDS

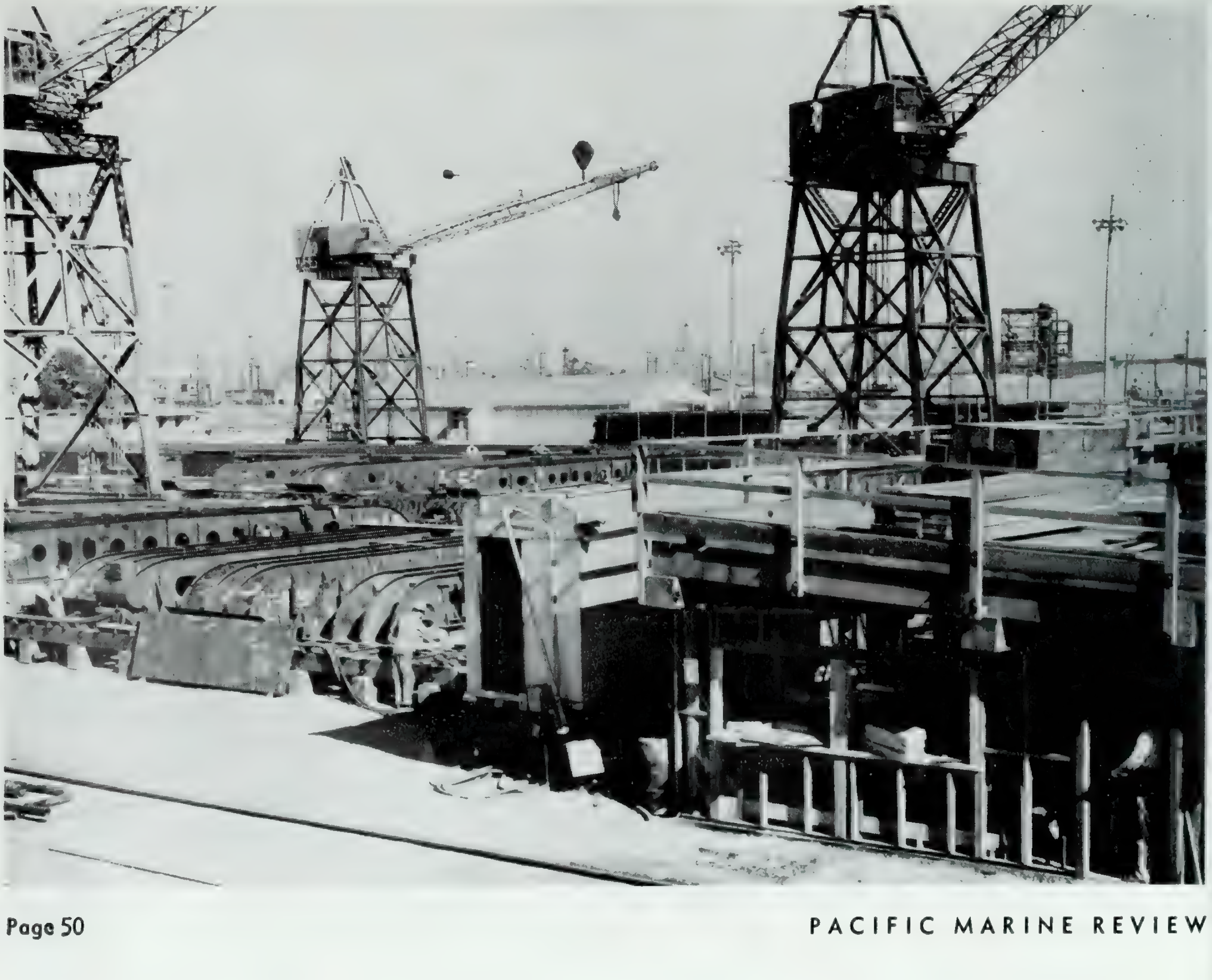


ONE OF THE BIG CRANES spotting preassembly unit in one of the hulls. See facing page for crane's load.

characteristic of the modern American assembly plant. Plate and various fabricated sections arrive daily from Consolidated's steel fabrication plant 20 miles away, where many sections are cut, shaped and assembled in much the same way as portions of a prefabricated house. Upon arrival at Wilmington, the sections are removed from trucks or flat cars, and placed in the vast storage racks on shore from each shipway. From the storage racks the steel goes to the preassembly skids where the various plates and sections are fabricated into larger units and lifted by the cranes onto the shipways and into the hulls. Two of the large warehouses, which have a combined storage area of over 130,000 square feet, are so situated that they can immediately supply any of the tremendous amounts of materials to any part of the yard or any division of the production with no loss of time.

The Administration Building, which

BELOW: View of the preassembly skids at the head of one way with tank top and floor assemblies.



is situated on the south side of "B" Street, houses the executive offices, the Engineering Department, the Accounting Department, the Purchasing Department and the stenographic force. Maximum efficiency is made possible by the ease of accessibility from one department to another. Situated in the very heart of the yard is the yard office building. This building houses the superintendent's office, together with the offices of the superintendents of machinery and shipwrights. Also in this building is the Production Control Department, composed of standards, planning, tool engineering, progress, material follow-up, and order divisions. A duplicate of the yard office building is the Maritime Building, which houses the inspectors of the U. S. Maritime Commission.

The number of employees at the yard is increasing very rapidly. More than 5000 ship workers are already at work, and large groups are being hired daily at the Personnel Department, which is situated at the edge of the yard on "B" Street. This building is so laid out that large numbers of applicants can be interviewed, classified and registered with dispatch. According to the Personnel Department, jobs are opening up rapidly for skilled men in the construction fields. Because of the current decline of normal construction activity due to prorities on materials, it is anticipated that plumbers, electricians, carpenters, and men in the other construction crafts will be available for shipyard work.

Before the first ship is launched, it will be necessary to dredge more than a quarter of a million cubic yards of silt from West Basin. To accomplish this, a huge power dredge is now in operation and is rapidly clearing the area for the many ships which will slide down Consolidated's ways to go into our country's wartime service.

A SECTION of bulkhead being swung into place by the crane on facing page.

THE FOREPEAK shaping up on No. 1 building way.

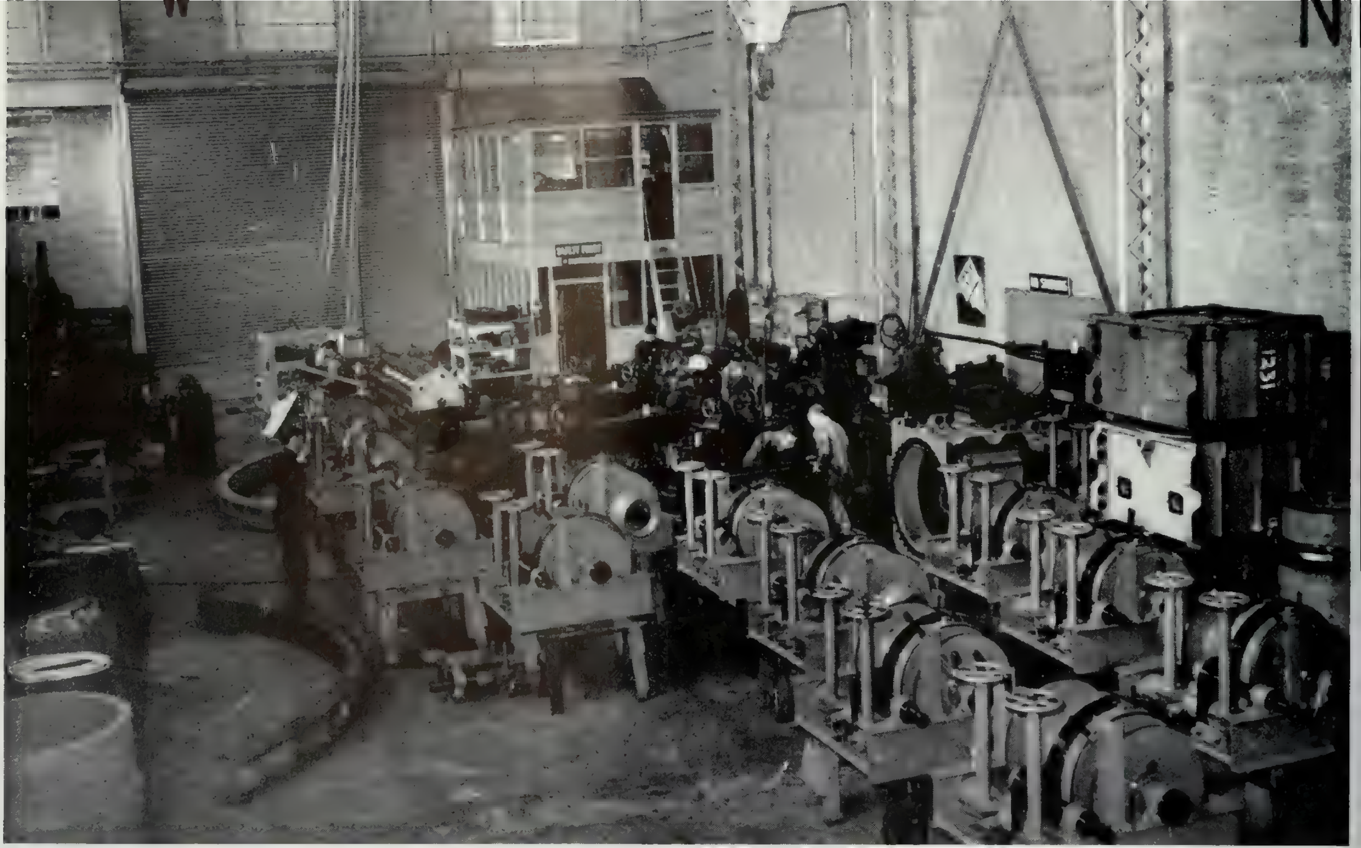
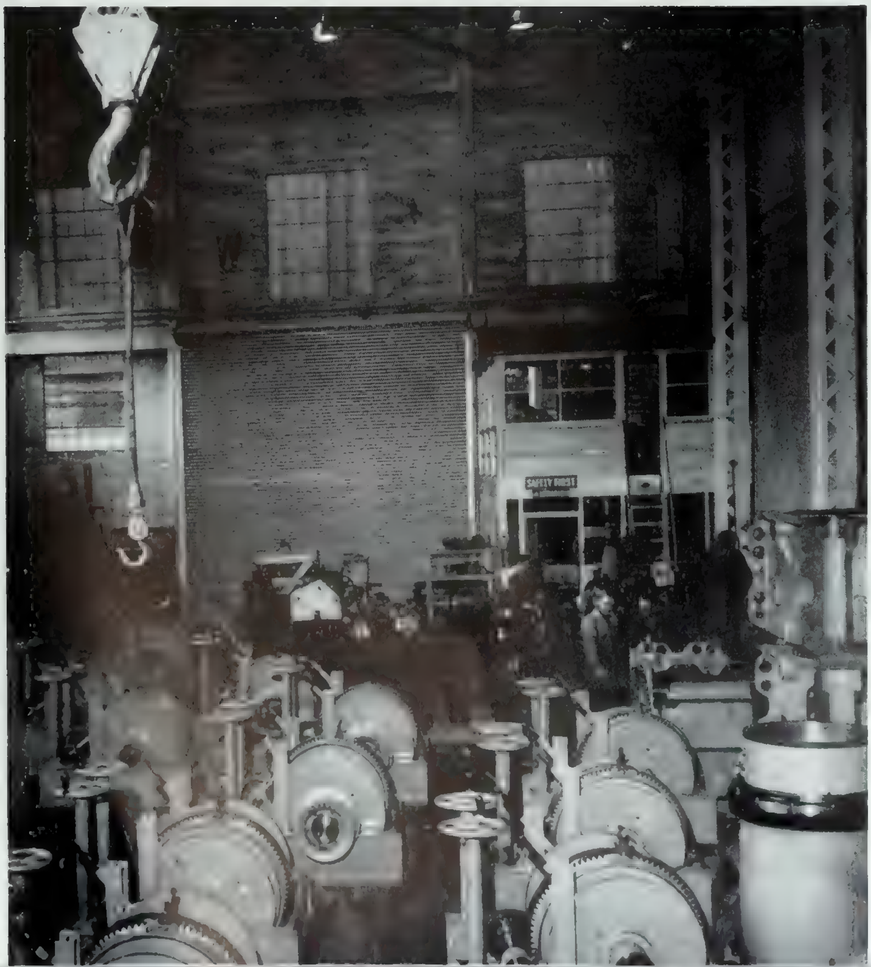


FIG. 1. NEW MACHINE and assembly shop of General Engineering & Dry Dock Company, San Francisco.

In A Marine Repair

FIG. 2. ANOTHER VIEW of shop, showing assembled winches in foreground.



FOR TWO DECADES the General Engineering and Dry Dock Company of San Francisco have operated one or more shipbuilding and repair plants on the Oakland Estuary and a large general and marine machinery production and repair shop in San Francisco. This San Francisco shop has been kept well equipped with the most modern machine tools of ample capacity to handle repairs and replacements for the machinery of any vessel regularly making San Francisco Bay a port of call.

This policy has borne fruit in a good run of contract work, particularly in repairs to large marine engines, and this shop is now very busy on production and repair work. Recently the shop became so crowded that a rearrangement and enlargement became necessary and a new addition in concrete, brick and steel was erected and

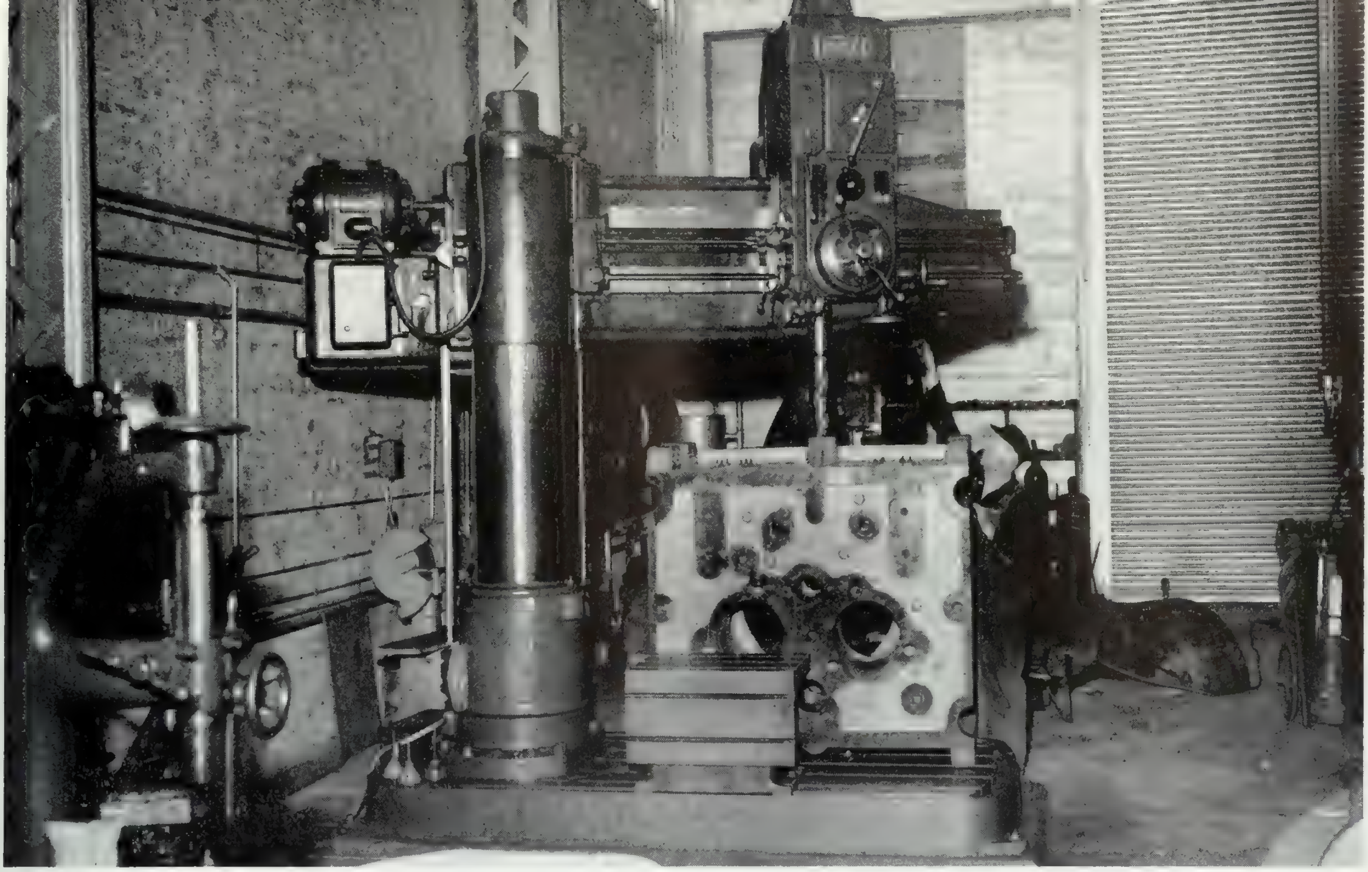


FIG. 3. CYLINDER HEAD for Burmeister & Wain 6-cylinder, 6000-horsepower diesel engine under Fosdick radial drill.

Engineering and Production Shop

adequate tool capacity and other facilities installed, including: New radial drill, lathes, smaller drill presses, punch and shear units, plate bending rolls and the like. Liberal overhead clearance is provided for the handling of heavy castings and other parts as well as finished equipment by means of a 35-ton crane of 46-foot span having a clear runway for the entire length of the shop and enabling material and products to be moved to and from the truck entrances at the street fronts.

In Figs. 1 and 2 a large number of winches are seen under assembly or completed and ready for delivery. Incidentally, it may be mentioned that in Fig. 1 there is shown to the left in the

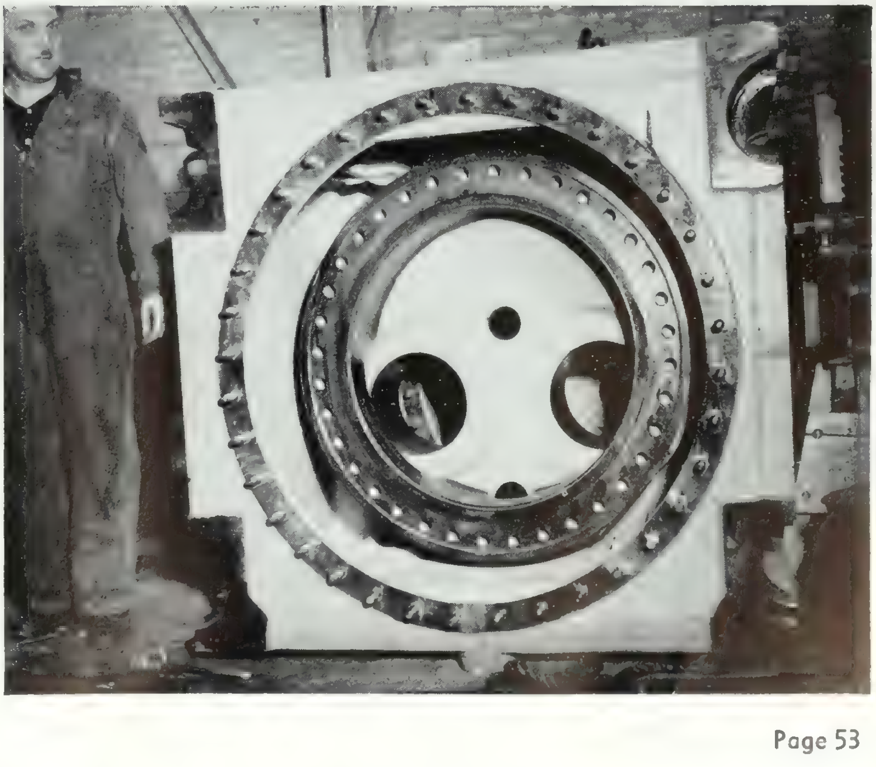


FIG. 4. VIEW OF DIESEL ENGINE cylinder head on shop floor.

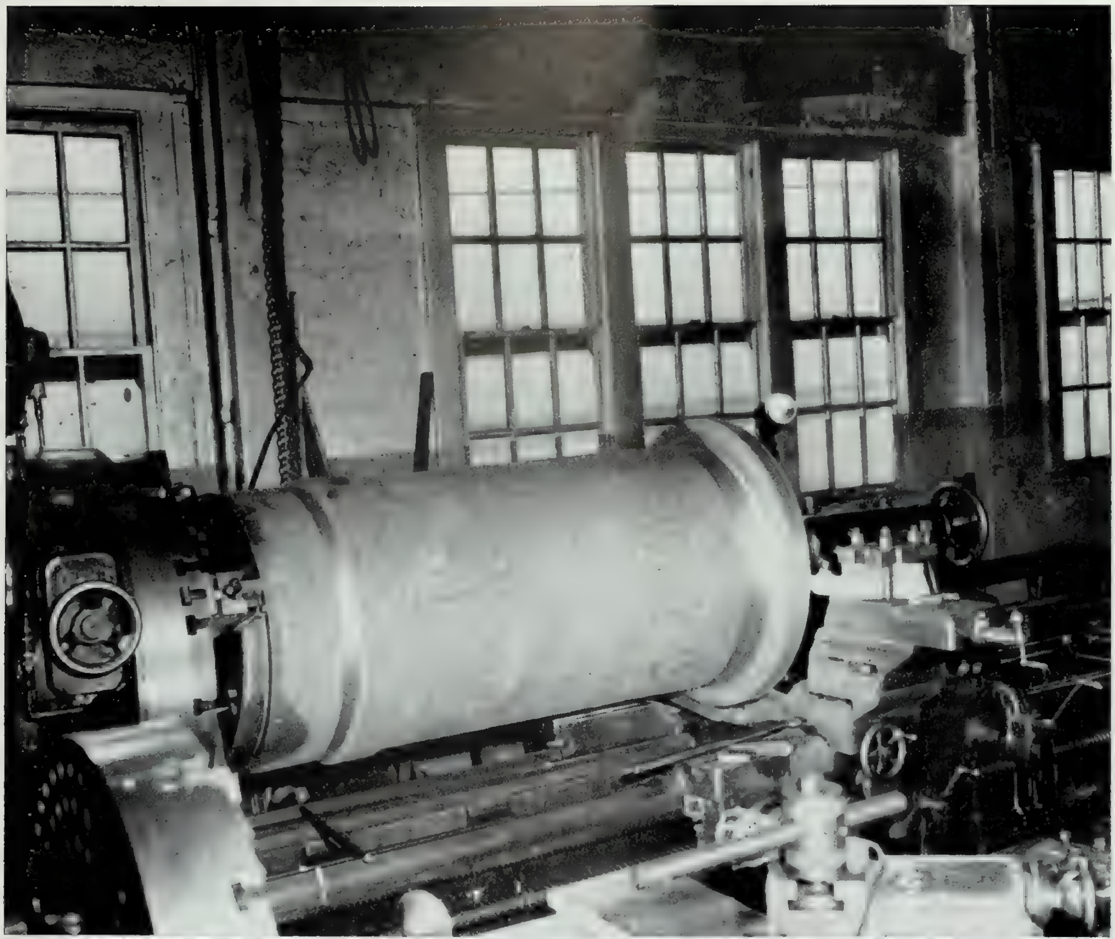


FIG. 5:

CYLINDER LINER (29¼" bore) in 48-inch lathe.

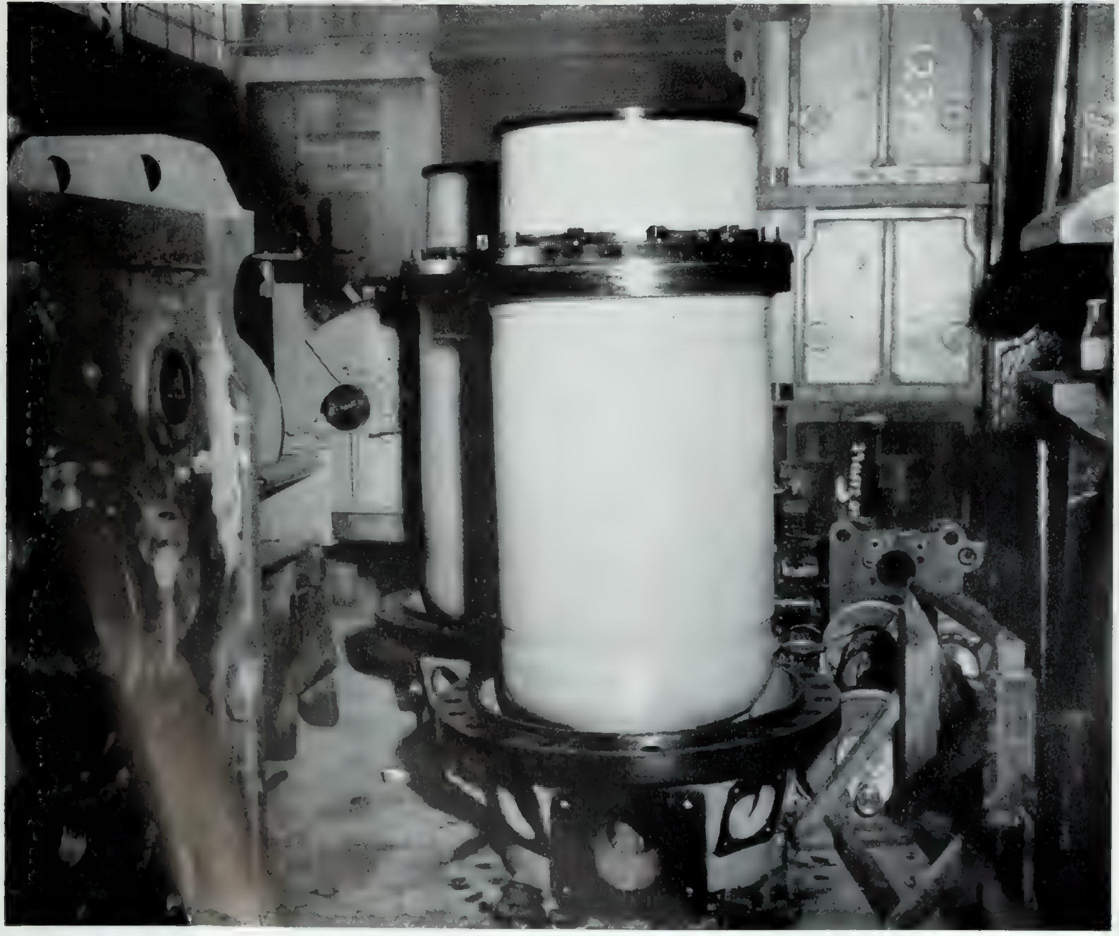


FIG. 6:

ANOTHER TYPE of cylinder liner and skirt.

foreground a steering quadrant to be finished for replacement on a ship. A drafting room for handling work for this department is located over the shop office in the far corner at the right.

Some of the heavier jobs handled by the plant are in the line of diesel engine cylinder heads, liners and skirts. Note in Fig. 3 the diesel main engine cylinder head under the 6-foot Fosdick radial drill, where many holes are drilled and tapped, bosses spot faced and other operations performed with most convenient handling of the drill or other tools through the ready movement of radial arm, head and spindle. Whatever operation is under way, the machine is easily controlled and the work is, of course, readily turned by means of the overhead crane so that one face after another is brought uppermost into place for application of the drill. On work of this size, the casting is placed directly on the bedplate of the radial so that maximum height may be obtained between upper face of the work and the end of the drill spindle. In the case illustrated, the casting, weighing 4½ tons, is handled under the radial with the arm raised to uppermost position. The holes being drilled in this view (Fig. 3) are to be tapped for eye bolts for lifting purposes.

This cylinder job is from a 6-cylinder, 6000-horsepower engine; and cylinder head, liner and skirt represent a total weight of 9 tons.

The close-up photo in Fig. 4 shows the same cylinder head from the opposite end and illustrates the circles of studs and holes for water jacket and cylinder liner. The cylinder liner is seen in a 48-inch American lathe in Fig. 5. The bore of the work is 29¼ inches and the liner weighs 3 tons in the rough casting.

Turning of flange and other cuts, facing of flange, and other finishing operations are accomplished as indicated. The boring operation is performed with a portable boring bar equipped with star feed.

Another view of a cylinder liner is shown in Fig. 6. This photograph is for a different type of diesel engine, and includes the lower skirt with the liner. The work is shown after testing under pressure by means of special equipment.

Among other recently installed tools in the plant are two 18″ Axelson lathes; also a 30″ lathe of the same make taking 24 feet between centers. One of the 18″ lathes is illustrated in Figs. 7 and 8 as applied to a special job of rather unusual character. The work is seen more clearly in the close-up from the back of the lathe. It consists of milling a double thread on a Monel metal valve stem 1.125″ in diameter. The thread is Acme form and is machined with a 3½″ milling cutter mounted on a spindle on a special fixture on the compound rest. The long cone-shaped center seen in Fig. 8 is an extension member cut away at the front for clearance and providing a 9-inch tail center to permit ample clearance for the milling attachment as it feeds the cutter along the work.

The cutter makes only one pass over the stem to complete the thread. The drive is by motor at the top of the fixture, and a V-belt. The cutter is adjusted laterally in setting up the job, by means of the compound rest and feed in and out is, of course, by the regular cross feed screw.

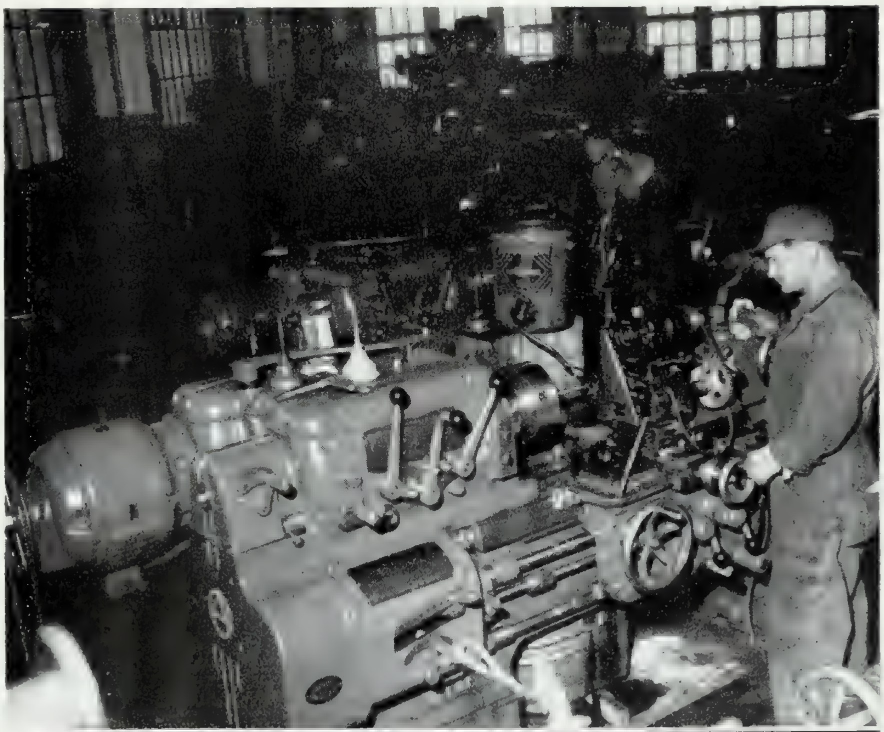


FIG. 7: THREAD MILLING a Monel metal valve stem in Axelson 18″ lathe.

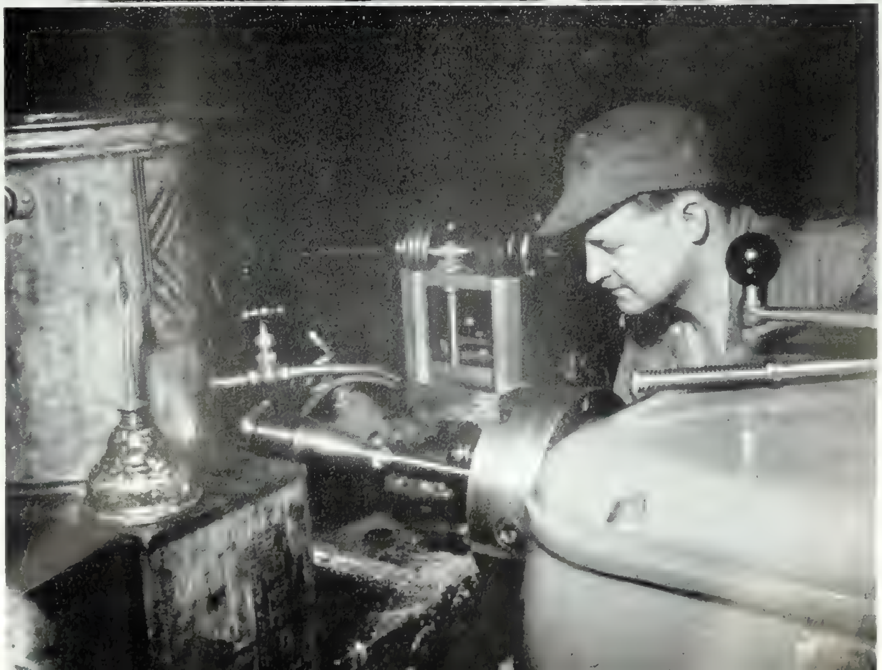


FIG. 8: CLOSE-UP of thread milling job in lathe.

RESIDUAL STRESSES IN WELDED SHIPS

by Harry Pierce

Welding Engineer, New York Shipbuilding Co.

WHILE IT IS TRUE that fears of residual and lock-up stresses in welded ships have been largely dissipated by the service performance of scores of these vessels, the subject still retains interest to designers and especially those charged with the rules and specifications bearing on the safety of such ships. In highly stressed ships, particularly, this subject is yet quite live and continues to be brought up, too frequently, in considering proposed methods which violate some of the old conceptions. It therefore warrants some analysis toward the end that new methods may receive consideration without unwarranted emphasis on the existence of residual stress.

Welding has its own peculiar advantages and disadvantages. No effort will be made here to discuss the reasons why welding has made such an advance in shipbuilding. It is more to the point now to see what the effect has been and to consider in some detail some of the peculiar problems presented by the wide adoption of welding.

Effect on Shipyards

The effect of welding on a shipyard plant may be both interesting and valuable as an indicator of the importance of some of the welding problems. In yards originally organized and operated long before the advent of welding, we now find that roughly ten per cent of the total personnel and an even higher percentage of production workers are welders, tackers and burners. This force ordinarily comprises either a separate or a subdepartment in the yard, and in practically all cases, is now the largest department in a shipyard.

Many new yards are operating entirely without riveting tools or equipment. At New York Ship, welding equipment has grown from some 20 individual motor-generator sets in 1928 to a point where the total output of welding equipment is well over 100,000 amperes and, allowing for the so-called working or duty factor, can supply over 1000 welding stations. The effect on certain crafts, which originally formed a large percentage of the shipyard pay roll, notably the riveters, and on electrical power, can well be imagined.

Shipbuilding has embraced every type of welding. Here again, as an example, resistance welding is used for practically all shop fabricated sheet metal work in aluminum, steel, and monel; oxy-acetylene welding for aluminum and for pipe; carbon arc welding for many non-ferrous items, principally brass and bronze heat exchangers; thermit welding in castings, forgings, and other heavy intersections. However, the bulk of shipyard welding consists of the metallic arc for the general fabrication of hulls, machinery, piping, hull fittings, and pressure vessels. Welding, directly or indirectly, has affected every department, every craft, and even the layout of the modern shipbuilding yard.

Somewhat like a river, which can either be made to serve man or to drown him, welding can improve our ships and speed up their construction, or it can, in many cases, be a burden. Which of these it is depends chiefly upon the manner in which it is applied and accomplished and how much plain common sense as well as good engineering is employed. The degree of success in putting this new tool or method to work is dependent upon the way in which everyone concerned recognizes its peculiarities and is willing to face and solve the problems involved in welded ships.

Problems Involved

When a ship is riveted together, the parts are gotten out to exact size, bolted in place, and after riveting, for all practical purposes, are in the same place and in the same state as assembled. It was therefore possible to lay

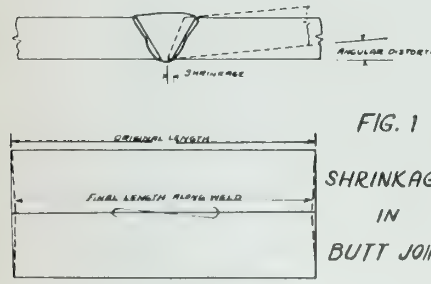


FIG. 1 SHRINKAGE IN BUTT JOINTS

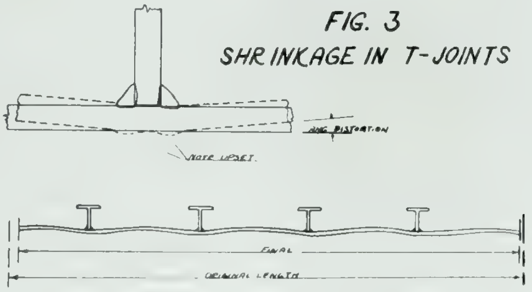


FIG. 3 SHRINKAGE IN T-JOINTS

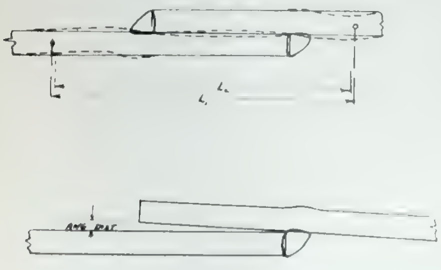


FIG. 2 SHRINKAGE IN LAP JOINTS

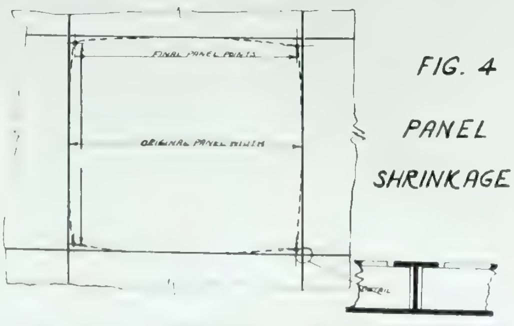


FIG. 4 PANEL SHRINKAGE

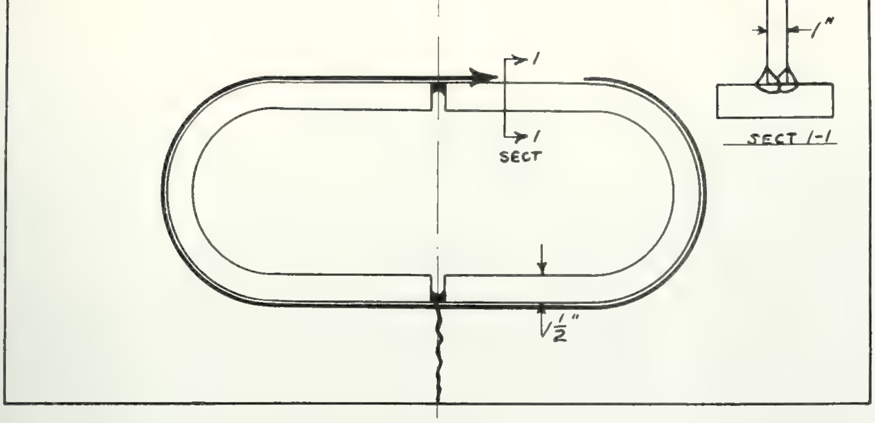


Fig. 5

down the ship's lines in the mold loft, get out templates of all parts, and to fabricate these parts with practically all holes shop-drilled or -punched. The erector then had plenty of holes to guide him, and, after the shipfitter had added his touches and the holes were reamed full size, the riveter completed the connection by driving home his rivets.

In welding, on the other hand, we deal in high temperatures and molten metal, which freezes and shrinks. The heat of the arc is intense enough to raise surrounding parts to appreciable temperatures so that we have additional shrinkage and distortion. We therefore have, in most welded structures, a change in dimension and a change in shape. To arrive at a given result, we must actually start with something different, and, by allowing for or controlling in some measure these changes, arrive at the designer's idea. This is fundamental and the basic reason for change in shipyard methods for revision of shop and ship practices.

Ninety per cent of the difficulty we get into in welded ships is the failure or the refusal of those concerned to recognize this inherent matter of shrinkage. A fitter will cut a plate to exact size and then dam welding because after welding, it is not the right size, the right length, or the right shape. Practically all ship construction is accomplished by the use of three types of joints—the butt, the lap, and the tee. Figures 1, 2, 3 and 4 illustrate the shrinkage behavior of these three joints and indicate the problem involved in compensating for loss of length and change of shape.

The solution of these problems is chiefly a matter of shop and ship practice; however, the designer can help in several ways:

(1) By reducing the amount of welding in any joint to the minimum necessary to do the work.

(2) By the use of joints where practicable which balance forces tending to cause distortion.

(3) By the arrangement of joints to permit allowances for shrinkage, subassembly, and sequences of welding which reduce or sometimes eliminate trouble.

Close cooperation between the yard and drawing room is a necessity, until methods and results are better known and have been standardized. Frankly, developments of one sort or another have been coming so fast that "best" practice changes almost from day to day.

While change of dimension (loss of length) and change of shape (distortion) are serious problems in the yard and the methods of control are interesting, our present purpose is to consider another phase which is possibly of greater interest to the designer, the owner, and operator; namely, the question of the stresses involved. Consideration of stresses may be subdivided in two parts: first, thermal stresses during the welding operation; and second, residual or locked-up stress in the completed structure.

Thermal Stresses

In the true sense, thermal stress during welding is a production problem and one which keeps the welding department continually on the alert. It is these thermal stresses which cause welds to crack as they are made, or, not infrequently, cause failures in the parent material itself, and which cause weird and sometimes unpredictable changes in shape.

To help solve these difficulties, electrode manufacturers are continually working on materials designed to combat such stresses, for an electrode today is much more than a piece of wire covered with a bit of dried mud. Variations in core wire, in the chemical make-up of the coating, in the preparation of those chemicals, and in their application to the wire give not only a wide range of physical properties, but determine the behavior of the weld deposit in cooling and corresponding metallurgical results in the parent metal.

In addition to protecting molten metal from the atmosphere, which is a primary purpose of the coating, the chemical and physical properties of the deposited metal can be controlled, rates of cooling changed, and the behavior of the welded joint both during and after welding altered appreciably.

The sequence of welding and the various methods of welding are carefully worked out to avoid undue stresses or concentrations of stress. Preheat to various temperatures, depending upon circumstances, may be used to reduce thermal stresses or to insure a deposit better adapted to resist them.

Some conception of the stresses which can be caused by temperature can be gained by considering the relation between expansion of a bar of steel when heated, and Young's modulus for the same material. Roughly, raising a piece of steel to 100° C., or 212°

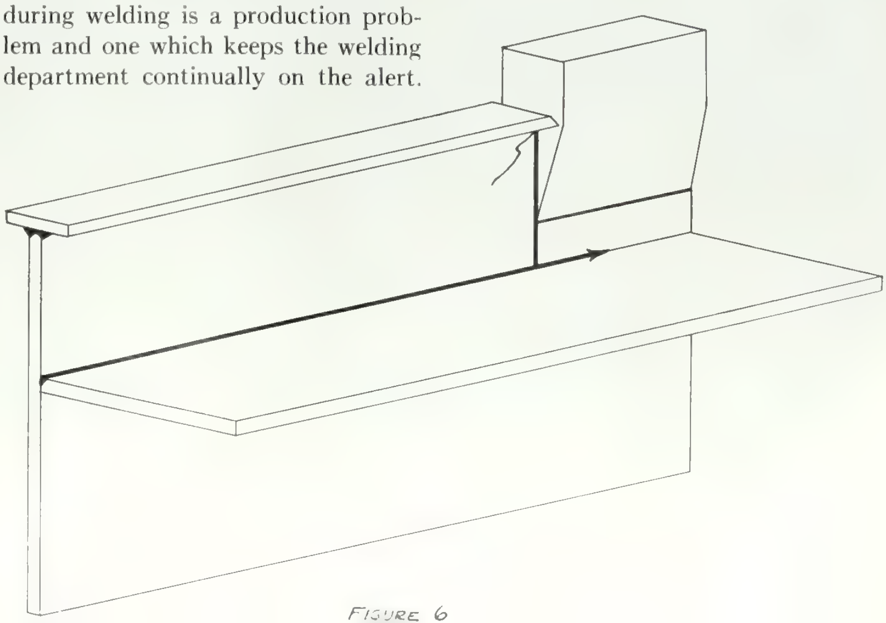


FIGURE 6

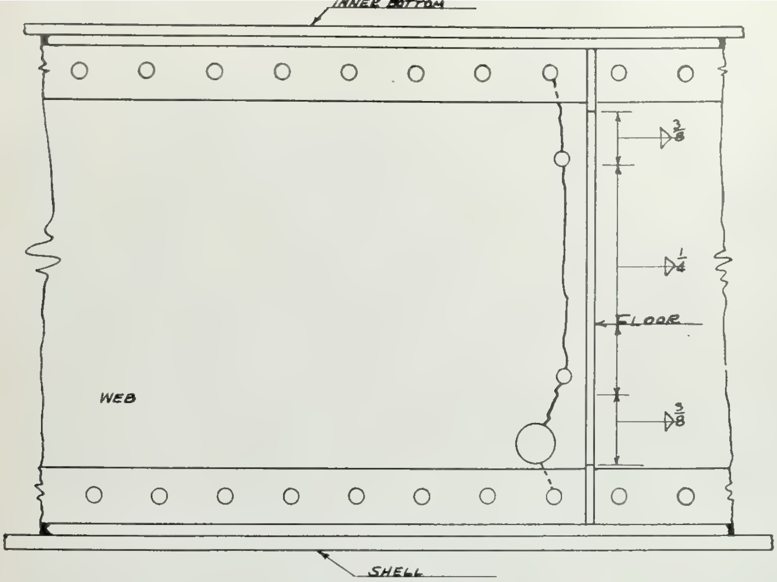


Fig. 7

F., results in an expansion in length equivalent to the strain imposed by a stress of 40,000 lbs. sq. in. This is equal to or greater than the yield point of mild steel at this comparatively low temperature. Carry this analogy to local heating of a plate—spot heating—where the heated spot is constrained by cold surrounding metal. It is obvious that we do not have to introduce molten weld metal to have thermal stresses.

Our commonest material–low carbon steel–is most fortunately equipped by nature to stand a great deal of this sort of mistreatment. In fact, too often we overlook the fact that severe stresses are being accommodated by plastic and elastic deformation due to the ductility of this material and its freedom from hard zones. We become a bit careless, subjecting it to stresses under conditions which do not permit it to distribute the load. Of these conditions, two are of primary importance:

(1) Points of high stress concentration; that is, "stress raisers," and

(2) Bi-axial or tri-axial stresses.

Dangerous Stress Examples

In the normal course of welding operations, it is quite easy to overlook either or both. Several examples come to mind. Figure 5 shows a comparatively simple assembly of heavy parts. Two arches were to be built consisting of a plate with a U-shaped cut-out stiffened by a heavy flange. The plating was ordered in a size which provided for two arches, and, in the interests of maintaining alignment, it was decided to leave it in one piece until the face plates had been welded. Since the flat bars for the face plates were received in two pieces and there was no necessity for a butt weld between them, only enough weld metal was placed at the root of each butt to hold the parts in alignment and to provide for the passage of the automatic welding machine. The ends and one side of this assembly were welded without difficulty. While making the weld on the second side, the opposite side of the assembly broke at the point shown on Fig. 5. In this assembly, we were dealing with comparatively heavy parts and the welding which had been completed had made the assembly exceedingly stiff. The tremendous heat developed by the automatic machine had simply caused expansion on the side being welded. The opposite side was rigid but a perfect stress-raiser was provided by the partly welded butt in the face plates.

Figure 6 shows an entirely different structure but with much the same cause and effect. The 80-lb. plate shown was being welded to the side of the 60-lb. plate, again with an automatic machine. In this connection, these two examples have been taken from automatic machine work only because the penalty for these oversights is apt to be exaggerated by virtue of the tremendous currents and heats used. Similar failures have been found in work manually welded and can be avoided in the case of the automatically made weld. In Fig. 6, the joint between the face plate shown along the upper edge of the 60-lb. plate had not been connected to the heavy forging, thereby providing a stress-raiser. As the automatic weld progressed some 12″ past this point, although at least 30″ below it, expansion of the 60-lb. plate threw a tremendous load on the cold edge and a crack developed as shown.

Thermal stresses of considerable proportion can come from other sources than the welding arc or a heating torch. Sudden changes in atmospheric temperatures—an exceptionally warm day or perhaps several days of warm weather with moderate variations, followed by a sudden and severe drop in temperature. Such changes are the cause of infinitely more trouble to the welding department than mere cold itself, providing it remains steadily cold. In my opinion, it is much more important to protect heavy weldments from sudden change than to maintain minimum temperatures of any particular figure. In ship structures built in the open, we must, of course, take out weather and temperature as we find them. In very heavy parts and on alloy steels, we have learned the value of preheating which is merely another way to protect our deposited metal from sudden chilling and accelerated contraction, as well as to reduce the formation of hard zones in the parent metal.

In most ship structure, fortunately, experience indicates little need for elaborate precautions, but a combination of adverse factors—change of temperature, points of high concentration, and bi-axial restraint—can still result in failures. Figure 7 shows failure which took place in a riveted longitudinal to which a large number of welded attachments are made. The riveted connections to shell and inner bottom are completed prior to the attachment of floors by welding. The web plates, therefore, tend to shrink whereas the top and bottom angles do not, the result being that these angles tend to restrict the free shrinkage of the web. In the case illustrated in this figure, the welding in this particular area was completed during moderate weather, followed almost immediately after completion of the job by an unusually sharp change. The crack shown was found shortly thereafter and appears to be a combination of the three adverse factors referred to. The question of restraint and possible bi-axial stresses will be referred to again; certainly in this case, the inadvertent location of temporary erection on the same side as the drain hole created the necessary concentration to cause failure.

"All-Out" for Victory

by Basil Harris

President, U. S. Lines

WITH THE PRESENT battlefields of this war three to ten thousand miles away, the ultimate success of the United Nations may well hinge upon the ability of our merchant marine to carry the materials to our forces fighting the war. The importance of the supply line increases as we pass rapidly from the defensive to the offensive phase of the struggle and as our production is stepped up to meet the ever-increasing need for planes, tanks, guns and ammunition. Obviously, we cannot win this war if these implements remain in this country. To take the offensive, we will have to strike at our enemies on battlefronts all over the world. The merchant vessels of America and her allies must carry the weapons to these battle areas, over thousands of miles of ocean.

It is a tremendous task, but fortunately it is a job for which we were prepared by a forward-looking Government, working hand in hand with experienced American ship operators.

In shipbuilding, the United States had two strikes on the enemy before the war began. For over a dozen years our country had been building fast, up-to-the-minute passenger and freight ships. Today, the Maritime Commission peacetime program of fifty ships a year for ten years has been expanded to a degree that dwarfs the most ambitious peacetime thinking. But if the machinery for that peacetime program had not been set in motion, we could not have speeded up our building program so readily when war descended upon us. Leading American steamship companies, whose fleets served the trade routes from American ports to all parts of the world, had already been working with the Government for a number of years on private building programs that dovetailed into the master plan of the Maritime Commission. All their resources, their trained personnel afloat and ashore, and their modernized fleets, were ready for the call when it came.

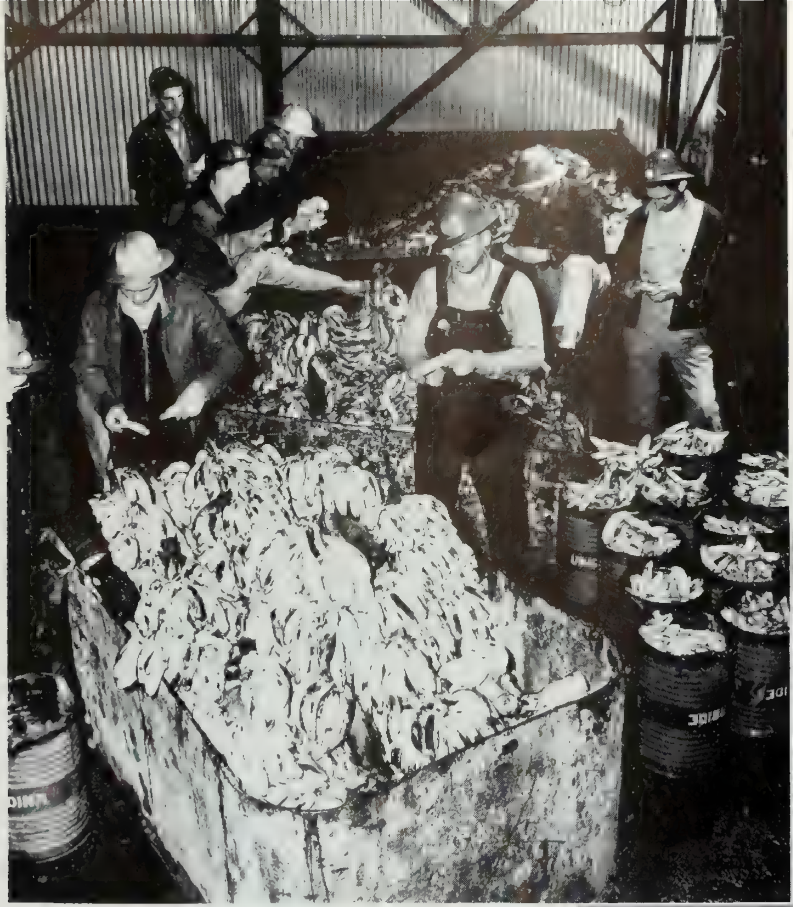
When war broke in Europe, the United States Lines, together with its associated lines, American Pioneer, American France, Oriole, American Hampton Roads, and Panama Pacific Line, comprised a fleet of 36 passenger and cargo ships, totaling 286,198 tons, operating in trade routes to Europe, the Far East and Australia, and between New York and California via the Panama Canal. All of these ships and their personnel were at the command of the Government. At once the big luxury liners America, Manhattan and Washington, were commandeered, along with other United States Lines' ships, to evacuate American tourists stranded in Europe.

It might be pertinent to point out here that **the large Axis liners such as the Bremen, Europa, Conte di Savoia, Rex, and many others which were turned into fast troop transports and armed cruisers as soon as war came would never have been built but for the dollars that the American traveling public in their misplaced zeal poured into the pockets of these same Axis nations in peace times by traveling on these same foreign-flag ships.** This certainly is a thought well to be remembered when peace comes again. American ship operators can only build new ships if American travelers and shippers patronize the ships flying their own flag. **Many of the Japanese transports which carried the troops to invade the Philippines and the Dutch East Indies and converted airplane carriers were built out of monies made on the Japan-United States run. Many American competitors were intentionally forced out of this trade by Japanese laws so favorable to their own ships and detrimental to American operators that it was impossible to remain in the trade without suffering huge losses.** Surely this is something our own lawmakers should give deep attention to so that, when peace does come, ours and other American-flag ships will be guaranteed a fair share of any trade in or out of American ports.

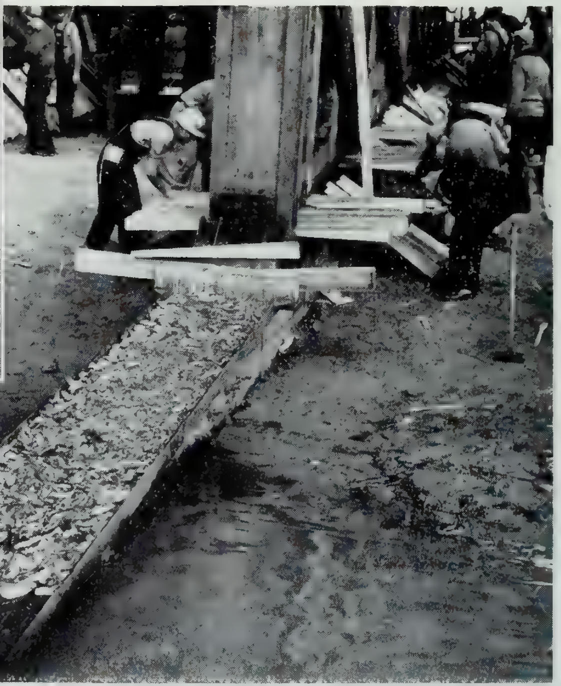
Even before America entered the war, all of the United States Lines' remaining fleet of passenger vessels, nine in all, had been called into service for conversion into transports. Today the America, Washington and Manhattan, ordered and built for the United States Lines, are the largest troop transports flying the American flag.

Some vessels that were contracted for as a part of the United States Lines' original replacement program, calling for twenty-three new ships, were assigned to war service even before they were delivered to us, but other vessels have been turned over to us to operate, and today our fleet of sturdy freighters is engaged in carrying vital war cargoes.

There are other figures that I think are significant in any attempt to show the role that the privately-owned merchant marine is playing in this war. These figures deal with the number of navy officers now on active service who received their training in the merchant marine. From the United States Lines alone, ninety officers who held commissions in the Naval Reserve have gone into active service on transports, tankers, Navy supply ships and fighting ships. Their training in the operation of merchant ships is invaluable in their present duties. In addition to the floating personnel there are a score or more members of the shore staff now serving either as officers or in civilian capacity with the Navy and the Army in positions for which they have been chosen because of their long years of experience in the shipping business.



ONE AMERICAN SHIPYARD, building Maritime Commission ships, finds that four or five tons of very ripe bananas are an excellent substitute for, and cost less than, launching grease.



We Got Plenty Ripe Bananas

Some Suggestions For Speeding Arc Welding

by H. O. Westendarp, Jr.

Welding Engineer, General Electric Company

ARC WELDING PROCESS has demonstrated its effectiveness in speeding up the production of ships, tanks, guns, and innumerable other products urgently needed in large volume for the war program. The problem now is to speed up arc welding; the problem of more work with less men must be solved.

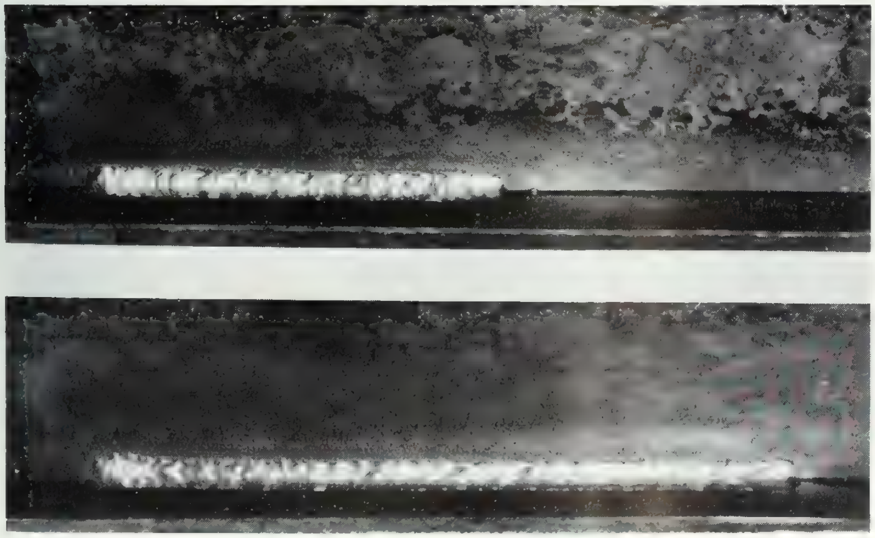
The answer is: on those applications where work conditions permit, use larger diameter electrodes which have a faster deposition rate in pounds per hour. Many jobs are being welded today with $\frac{5}{32}''$ or $\frac{3}{16}''$ diameter electrode where a larger diameter electrode could be used to produce welds just as high in quality and at a decided increase in speed.

Military requirements are draining our man power needed for production work. Arc welding is a process which requires highly specialized training, which takes time (approximately four months). Based upon present estimates of 200,000 arc welding operators in the industry, a study of the following data will indicate that, if these operators could swing to larger electrodes on one-quarter of their work, the result would be equivalent to an immediate addition of from 15,000 to 25,000 experienced operators to the welding industry.

Using larger electrodes for increased speed is not a new idea; it has frequently been advocated by welding engineers, and some progressive plants are now operating on this basis. Under today's conditions, however, it is of the utmost importance that this matter be investigated thoroughly by all users of welding. In such investigations a careful analysis should be made to determine:

1. The general classes of arc welding where this "speed-up" may most effectively be accomplished.
2. The specific applications in these classes where work conditions permit larger electrodes to be used.

The following considerations will serve as a guide in changing successfully from smaller to larger electrodes.



PHOTOGRAPH OF TWO FILLET WELDS made by same operator in one minute. The welds are both ¼ inch fillets. On the upper weld 3/16 inch rod was used; on lower ¼ inch rod. Compare length: top, 5.75 inches; bottom, 10 inches.

Position of Welding

A $\frac{3}{16}''$ diameter electrode is the largest size with which it is practical to weld in the vertical and overhead position. Larger electrodes require amperages which produce too much heat for proper control of metal in vertical and overhead welds; as a result, spatter loss is excessive, and poor welding results.

Fillet Size

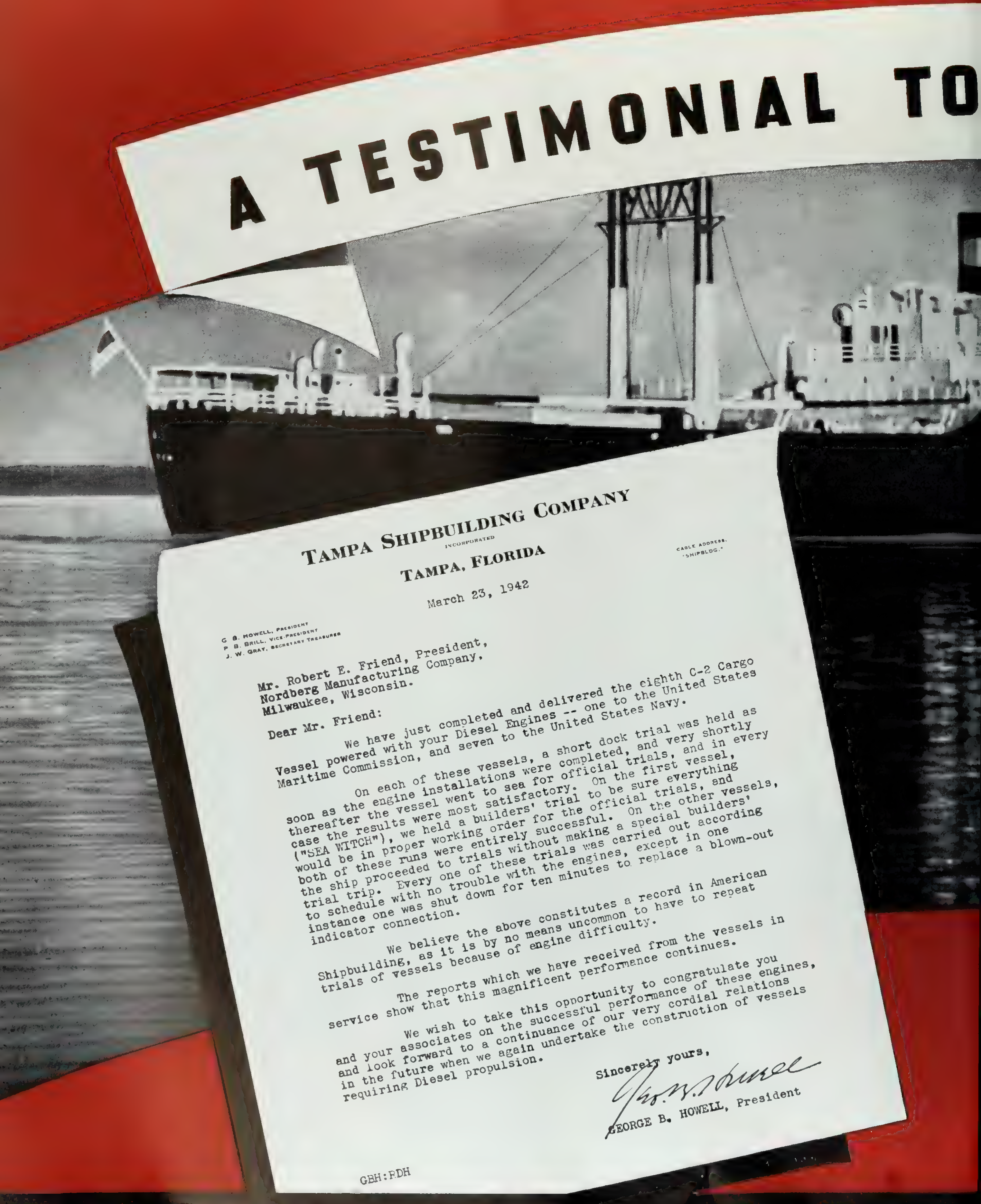
An increase from $\frac{5}{32}''$ diameter to $\frac{3}{16}''$ diameter electrode is not recommended for vertical fillet welds until the size of the fillet reaches $\frac{5}{16}''$ or greater. A $\frac{5}{32}''$ diameter electrode is preferred for making ¼″ and smaller fillet welds in the vertical position. A $\frac{3}{16}''$ diameter electrode applied to these smaller size fillet welds results in surplus weld metal being deposited in the form of a convex bulge on the fillet which would not contribute to strength and would waste scarce electrode material.

Plate Thickness

Many applications are such that the work either is or can be successfully positioned for flat welding. In this, as in the vertical and overhead position, plate thickness will affect the maximum size electrodes that can be regarded as practical to use. Generally speaking, electrode diameters up to the plate thickness can be used. This is

(Page 64, please)

A TESTIMONIAL TO



TAMPA SHIPBUILDING COMPANY
INCORPORATED
TAMPA, FLORIDA

CABLE ADDRESS,
"SHIPBLDG."

G. B. HOWELL, PRESIDENT
P. B. BRILL, VICE-PRESIDENT
J. W. GRAY, SECRETARY TREASURER

March 23, 1942

Mr. Robert E. Friend, President,
Nordberg Manufacturing Company,
Milwaukee, Wisconsin.

Dear Mr. Friend:

We have just completed and delivered the eighth C-2 Cargo **Vessel** powered with your Diesel Engines -- one to the United States Maritime Commission, and seven to the United States Navy.

On each of these vessels, a short dock trial was held as soon as the engine installations were completed, and very shortly thereafter the vessel went to sea for official trials, and in every case the results were most satisfactory. On the first vessel, ("SEA WITCH"), we held a builders' trial to be sure everything would be in proper working order for the official trials, and both of these runs were entirely successful. On the other vessels, the ship proceeded to trials without making a special builders' trial trip. Every one of these trials was carried out according to schedule with no trouble with the engines, except in one instance one was shut down for ten minutes to replace a blown-out indicator connection.

We believe the above constitutes a record in American Shipbuilding, as it is by no means uncommon to have to repeat trials of vessels because of engine difficulty.

The reports which we have received from the vessels in service show that this magnificent performance continues.

We wish to take this opportunity to congratulate you and your associates on the successful performance of these engines, and look forward to a continuance of our very cordial relations in the future when we again undertake the construction of vessels requiring Diesel propulsion.

Sincerely yours,

GEORGE B. HOWELL, President

GBH:RDH

NORDBERG MARINE

Unusual Engine Performance

The Men Who Design Ships
The Men Who Build Ships
The Men Who Install The Engines In Ships
The Men Who Operate The Engines In Ships
The Men Who Go To Sea In Ships

know the importance of

SIMPLICITY
ACCESSIBILITY
DEPENDABILITY

coupled with high efficiency and long cruising radius of Nordberg Diesel Propelled Vessels.

NORDBERG MFG. CO., MILWAUKEE, WIS.

DIESEL ENGINES

TABLE 1

Typical Deposition Rate Pound Per Hour—100 Per Cent Arc Time

Electrode Diameter	Flat*	Horizontal*	Vertical*	Type of Electrode	
5/32″	2.9	2.7	2.4	All-position dc	Reverse Polarity
3/16″	4.5	4.0	3.2	All-position dc	Reverse Polarity
1/4″	8.0	6.0	----	Flat ac or dc	Straight Polarity
5/16″	11.5	----	----	Flat ac or dc	Straight Polarity
3/8″	13.5	----	----	Flat ac or dc	Straight Polarity

*Current at proper value in all cases.

TABLE 2

Position of Welding	Change in Electrode Size	Increase in Deposition Rate
Vertical and Overhead . . .	5/32 to 3/16	33 per cent
Horizontal	3/16 to 1/4	50 per cent
Flat	3/16 to 1/4	77 per cent
Flat	1/4 to 5/16	43 per cent
Flat	5/16 to 3/8*	18 per cent

*Experience indicates that magnetic arc blow increases with the size of electrode and welding current. Therefore the ⅜″ diameter electrode is generally recommended for operation with alternating current only.

affected, however, by other conditions, such as fit-up, type of joints, etc. Electrodes are available in sizes up to ⅜″ diameter. Larger sizes have not proved to be practical to date.

Table 1 shows the "speed-up" possible in those cases where work conditions permit change to larger electrodes.

Table 2 shows rather startling increases in speed when considered on a percentage basis.

In addition to the savings indicated in these tables, which are based on the difference in deposition rates of electrodes, larger electrodes reduce the number of times the operator has to stop welding and change electrodes. Time required for cleaning the crater and restriking the arc is also reduced. The number of changes required per pound of metal deposited for various size electrodes are shown in Table 3.

TABLE 3

Electrode Size	Electrode Changes per Lb. Deposited
5/32x14″ length	18
3/16x14″ length	13
1/4 x18″ length	5
5/16x18″ length	3
3/8 x18″ length	2

The following will indicate the major classes of arc welding applications and their corresponding electrode requirements, and will indicate where pressure should be applied in order to speed up production.

Major Classifications

1. Field welding: Ships, buildings, bridges, pipe lines, etc.

   Approximate electrode requirements—85 per cent all-position type; 15 per cent flat type.

2. Shop welding: General fabrication, tanks, gun mounts, ship sub-assembly work, machinery, etc.

   Approximately 65 per cent flat type; 35 per cent all-position type.

3. Shop welding: Repetitive straight-line production welding operations, axle housings, tank wheels, etc.

   100 per cent flat type, or 100 per cent all-position type.

4. Job shop welding: Miscellaneous small parts.

   Approximately 75 per cent all-position type; 25 per cent flat type.

Attention should be directed to Classes 1 and 2. They offer the greatest opportunity for "speed up." Class 3 has already received detailed time study, and in practically all plants the most economical electrode is now being used. For example, a tank wheel fabrication job would be carefully studied to determine the best type of electrode from the standpoint of physical properties of deposit, weldability characteristics, speed, etc. Then the type selected would be used by the entire production line.

Class 4 represents a very small percentage of the industry and the use of larger electrodes is limited by plate thickness and type of work.

Applications in Class 1 should be studied to determine ways and means of increasing from 5/32″ to 3/16″ all-position type electrodes, wherever work conditions permit.

Applications in Class 2 should be studied primarily to determine ways and means of increasing from 3/16″ all-position type to ¼″ horizontal type electrodes, where work conditions permit. This class also includes opportunity for increasing from 3/16″ on up to ⅜″ flat type electrodes, where work conditions permit.

◆

"The Inside of Arc Welding" To Be Available Soon

Six one-reel, all-color sound motion pictures designed to help speed war efforts through the faster and better training of welding operators are now under way for the General Electric Company, according to an announcement by C. I. MacGuffie, manager of G-E arc welding sales. Titled "The Inside of Arc Welding," the films are being produced by the Raphael G. Wolff Studios, Hollywood, who have evolved a new technique for picturing this difficult subject in a dramatized and highly interesting manner.

When completed the pictures will be made available to public, private, and industrial welding schools, as well as to other interested groups. The first of the pictures covers the fundamentals of arc welding. It is scheduled for general release about April 20.

The other pictures will be available about June 1, and will deal with technique of arc control and electrode manipulation for all welding positions, using both direct- and alternating current equipment.

Because they will show for the first time just what actually goes on inside the arc, the "Inside Arc Welding" pictures will be of great interest to the expert welder as well as the beginner.

Information as to how to obtain the pictures will be supplied by the Visual Instruction Section, Publicity Department, General Electric Company, Schenectady, N. Y., or the nearest General Electric office or arc welding distributor.

The A-B-C of . . .

ELECTRIC-DRIVE OPERATION

MARINE ENGINEERS the world over are entirely at home with any form of steam machinery. In general, the relation of opening a valve and then seeing something move is direct and familiar. This is also more or less true in the rapidly expanding number of diesel ships, but, when it comes to electric drive, the contactors and switches that hide behind switchboards and hold such invisible things as volts and amperes are sometimes viewed with alarm.

Now, one way to think of the control of a conventional turbine-generator synchronous motorship is to think of some of the familiar operations of driving a car. First, the engine (turbine) is started, and to any steam engineer the usual condenser equipment and turbine auxiliaries are no problems. Now, with the engine idling smoothly and the oil flowing to all bearings, let's look at the control. Usually there is a gear shift (reverser lever) and an accelerator (governor controller).

Besides the speedometer (tachometer) to tell the speed, there will be an engine temperature gage (probably more than one in the windings of the generator and motor) and ammeters to check the current flow to the motor.

The reverser lever combines the clutch and gear shift, and will have two or three positions ahead and astern. Since these result in only a "starting" and "running" condition, let's simply say "low-speed" and "high-speed." The governor control lever simply operates to set the speed to be held by the governor, with a minimum or idling speed setting which is used also as the speed for "low-speed" and maneuvering.

Although there are no gears as such in the power transmission, speed reduction effect is obtained by the characteristics designed into the motor and generator. For example, the generator and turbine may have 3600 rpm as normal full speed, while the motor may run at 90 rpm to deliver normal full power to the propeller.

EDITORIAL NOTE

This article was prepared especially for PACIFIC MARINE REVIEW by the technical staff of an American shipyard that has built and is building many steam-turbo electric-drive merchant vessels.

It is intended here to very simply remove the mystery which seems to be created in the minds of steam operating marine engineers by the thought of electric propulsion. In the more detailed and thorough treatment of this subject currently running in our section, "Your Problems Answered" by "The Chief," our readers will find the reasons underlying this simplicity in the control and the operation of electric drives.

Suppose we are standing by to leave the dock. The reverser is in "Off" position and the governor lever is at "Maneuvering" position. These usually are interlocked mechanically so as to have the governor set for low speed when moving the reverser, or to keep the engine speed low while shifting gears. When the telegraph rings "Slow Ahead" simply shift into "Low Ahead," which will start the propeller turning and bring it up to nearly the same relative speed as the turbine.

Now, right here is the spot where a little skill results in a smooth shifting of gears into high. If, in a car, the clutch is engaged when the two halves are running at different speeds there will be a jolt as the car and the engine suddenly get into step. The same thing may happen between the generator and the motor, and it would be necessary to start over again. But the trick is very simple, just as smooth gear shifting in a car is practically second nature to us. One easy guide is to watch the motor ammeter. When the reverser is moved into "low" speed the ammeter will suddenly show a very high reading, probably way over normal. That's because a lot of torque is being used to get the propeller started. Now, watch closely and in just a moment the ammeter pointer will begin to dip, and then settle back down toward normal; now shift into high by moving the reverser to the last notch ahead.

If the speed is not high enough, simply move the governor lever toward high speed until the desired rpm is reached; in fact, for any speed desired, it is necessary only to move the governor lever to the position giving the speed wanted. Since the electric drive has ample torque at all speeds, it is not necessary to "shift gears" again until "Stop" or "Astern" is signaled. If "Stop" is rung up, for example, move the governor lever to "Maneuvering" (to cut the engine speed to idling), then move the reverser to "Off." That's all. If "Astern" is signaled while "Ahead" is being used, set the governor to "Maneuvering" as before, then move the reverser to "Low Speed" astern, and as soon as the propeller is turning at idling speed astern, shift into "High" and set the speed on the governor.

So much for controls. As for the instruments and gages, the usual steam and oil gages tell their own story. The temperature meters for the motor and generators are guides for turning on water to the air coolers—almost like regular procedure with oil coolers. The ammeters and voltmeters tell the story of how much horsepower the plant is developing. And as to standby or in-port, just remember that what electrical machinery likes most is to be kept warm and dry.

News FROM THE PACIFIC NORTHWEST

by Daniel L. Pratt

Northwest Builders On An All-Out Production Basis

They're rolling them out fast in the Pacific Northwest the last sixty days, and from now on they are going to come faster, and this applies to the Navy yards at Seattle, the Maritime yards at Tacoma and Portland, and also to the wood shipbuilding plants at Bellingham, Astoria, Coos Bay and elsewhere along the north coast. This wide-flung effort, the tremendous activity is worthy of iterated and complete relation each month, but space restrictions compel reduction of each theme to prosaic paragraphs which only hit the high spots. Not only are new ships being built in record time in yards which six months ago were vacant meadowlands, but new ways, new plant expansion and the creation of entire new yards are adding constantly to the extent of this unparalleled shipbuilding effort.

"Oregonship" Keeps Up Fast Record

Oregon Shipbuilding Co. of Portland, which launched its first Liberty freighter September 27, 1941, kept up the fast pace it has set by launching its 26th vessel of this type on April 7, and the 27th on April 13. At its present set schedule of one ship every six days, the yard should, by the time this is published, have two or three more boats in the water. Meantime the Kaiser interests are busy with their other two new plants.

The huge new yard at Vancouver, Washington, originally planned as an eight-way yard, now has four more ways added to the plans. The first keel was laid April 15.

The new yard on Swan Island, construction of which is under full swing, has had its contract modified and instead of building Liberty ships, it will start work on a Maritime Commission order for large steel tankers.

Together the three yards will have a total of 31 ways, making one of the greatest aggregated shipbuilding concerns in the country.

Vancouver Plant A Model One

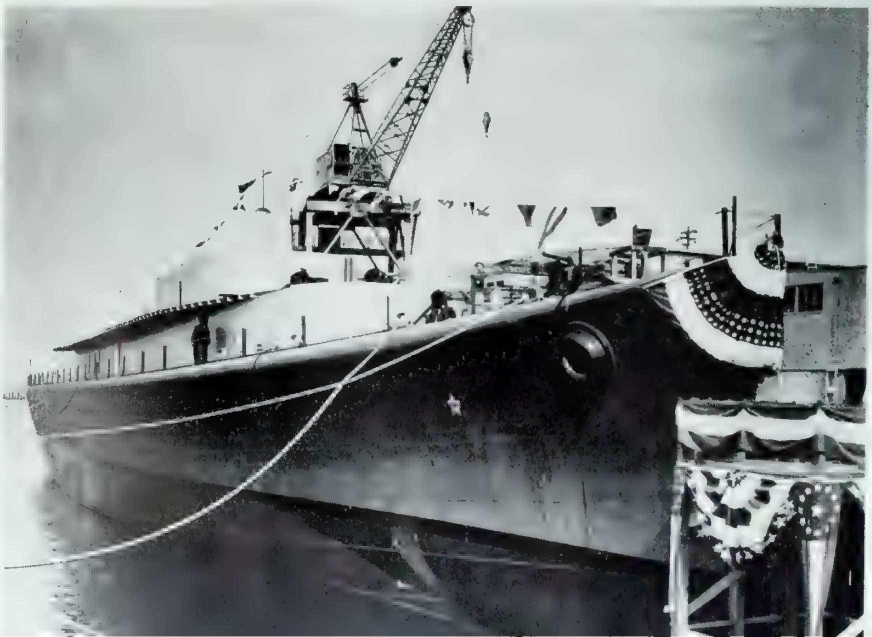
With the laying of the first Liberty ship keel on April 15, the immense new 12-way **Kaiser** plant at Vancouver, Washington, went into formal operation. This yard, described briefly in the last issue, is said to be the most modern of all the Kaiser yards on the Coast, though the improvements which it incorporates will undoubtedly be included in those already operating.

Work was not started on moving dirt on the site of this yard until January 9 of this year. By the end of the year, they expect to launch at least 25, and to deliver 18 to the Maritime Commission. That sounds like a modest estimate, as work on the "Oregonship" plant was not started till January of last year and 27 vessels had been launched when this was written. When it reaches full production, the Vancouver plant will employ about 25,000.

Seattle Port Leases East Waterway Dock

The **Seattle Port Commission** has announced the leasing of the East Waterway Dock, on the east side of Harbor Island, to replace part of the facilities lost when the Navy recently took over the Smith Cove Terminal. An understanding of the lease is that the dock may be purchased outright for $900,000 if the voters approve the proposition when it is submitted to them in November. The principal factor at present is the necessity for providing facilities for **Salmon Terminals, Inc.,** made necessary when the

AFTER BEING FLOATED out of her building basin, the sea plane tender San Pablo is christened at the outfitting dock by Mrs. J. W. Hall, assisted by Miss Winette DeLaye.



Navy took over Pier 40. It is the desire of the commissioners to keep these salmon storage facilities intact, rather than scatter them, as they handle the major percentage of the canned salmon produced in the Pacific Northwest and Alaska. As part of the transaction, the Port Commission will also spend about $360,000 for the construction of thirty-six additional wheat storage bins at the Hanford Street terminal, adding about 800,000 bushels capacity to the present 1,500,000 of the Hanford terminal. The total area of the East Waterway Dock is 22.86 acres, with 18.2 more acres extending into the waterway, which is only one-sixth the area the port lost when the Navy took over Smith Cove. Even with the construction of the proposed new unit on the old Skinner & Eddy Tract, the port will be replacing only one-half the space lost to the Navy.

Expansion of Todd Drydock Under Way

Expansion of the Harbor Island plant of the **Todd-Seattle Drydocks, Inc.,** announced last month, is now under way. Eleven acres of ground, including the property of the Standard Gypsum Co., south of the Todd plant, have been acquired for use in the $6,000,000 expansion plan, which includes two 500-foot slips, shop buildings and offices. The new main shop buildings will be 400 feet long. The gypsum company occupies 7 acres of this land and has a pier on the property. The expansion is for additional repair facilities, which will include a new floating drydock on the West waterway, a one-section wooden dock, 410 feet overall, with lifting capacity for vessels up to 9000 tons deadweight. This drydock was to be launched April 30. The Todd repair yards on Harbor Island now have one 16,000-ton and one 15,000-ton drydock, each 531 feet in length. **General Construction Co.,** of which **J. A. McEachern** is the head, will build the new dock.

Army Terminal Nears Completion

Seattle's new "Port of Embarkation," the new Army terminal being built on the south waterfront, is now about 80 per cent complete. The 1100-foot pier at the foot of Atlantic Street, part of the enlarged facilities, will serve as a general cargo pier, and the most modern cargo handling machinery obtainable will be installed.

"Admiral Rogers" May See War Service

The search for carriers to take part in the war effort recently was carried to isolated moorings in the Pacific Northwest and to another forgotten ship which may sail the seas again. This vessel is the **Admiral Rogers,** passenger ship of other days in the Coastwise and Alaska trade. Built at the Union Iron Works 40 years ago and launched as the **Spokane,** the vessel was one of the finest cruise ships of her day and the favorite of Alaska tourists from all over the country. She was operated by the old Pacific Coast Steamship Co., and then by the Pacific Steamship Co., which gave her her present name. Retired from service, she was purchased by Dulien Steel Products Co. of Seattle. Serious inquiries are now being made as to her fitness for service and she will undergo an extensive survey to determine the condition of her hull and engines. For more than five years, she rode at anchor in Lake Union, Seattle, and as she swung with the wind to a bow anchor only, she was used by the residents of the surrounding hills as a wind and weather vane.

Marine Shorts

Expenditure of more than $63,000,000 in the Pacific Coast states for rivers, harbors and flood control work as recommended to Congress by the United States Engineers includes some important projects in the Pacific Northwest. A few of the many noted are as follows: **Grays Harbor and Chehalis River,** for completion of north jetty and bar dredging, $270,000; **Willapa River and Harbor,** dredging, $60,000; **Neah Bay, Cape Flattery,** construction of breakwater, $1,375,000; **Columbia River,** between Vancouver and Bonneville, $400,000; also considerable sums for the improvement of the **Snake** and middle **Columbia.**

* * *

Lieut. D. T. Adams, director of the Coast Guard Auxiliary, has sent out an appeal to boat owners of the Pacific Northwest to assist in increasing the number of boats and units in this organization. Lt. Adams expects to have at least 50 flotillas in the 13th Naval District. The **U. S. Coast Guard Auxiliary** is a voluntary organization of yacht and motorboat owners, first organized in 1939 as the **Coast Guard Reserve,** but the war has given it a new status. Its purpose is now to cooperate with the Coast Guard in performance of wartime duties. The basic unit of a flotilla consists of not less then ten members and ten boats.

ON ST. PATRICK'S DAY, Mrs. Blanch Mahoney, just after christening U. S. destroyer Doyle at Seattle, greets a "broth of a boy from the old sod."

* * *

The urge to resort to a greater extent to wooden ships for cargoes and tankers is growing stronger every day. British Columbia's wooden shipbuilders are making a strong fight at Ottawa, and Northwest Congressmen, backed more and more by public opinion as oil and commodity shortages get more acute, are using every possible pressure with the Maritime Commission. Lifeboats of plywood are also being built and tested and several have passed Government inspection. But progress on the plan is slow and in the meantime the situation grows serious. **Senator McNary** recently advised **Governor Sprague** of Oregon that wooden ships for several cargo purposes were under consideration, and might be authorized soon, but that doubt existed over oil barge construction.

* * *

The **Fishing Vessel Owners' Association** of Seattle, involving most of the halibut vessel operators on the

North Coast, have decided to censor their own news of their vessel's movements, etc., during the fishing season just setting in. They are subject to Navy censorship, but they say that the safety of their own men and vessels is directly vital to them, so they say they're going to censor their own movements and let the Navy censor what's left.

* * *

Establishment of the office of District Captain of the Port organization, designed to centralize control and responsibility for protection of harbor facilities, has been announced by **Admiral C. S. Freeman** of the 13th Naval District. The new office for harbor protection is being created as a result of an order from the President for the Navy to take all necessary action toward such protection, the order being issued immediately after the disaster to the Normandie. Immediate plans call for appointment of a port captain in Seattle and Portland, with captains of other ports being selected later.

* * *

R. B. Bivins, manager of the **Seattle Shipbuilding & Drydock Co.,** is willing to bet anything from dollars to doughnuts that a 28-man crew at his yard can frame a mine sweeper faster than any similar gang in the U. S. Their latest record: The crew "framed"—bent and set up—all the 87 oaken ribs of a 135-foot YMS type wooden mine sweeper at the yard in 16½ hours and are constantly beating their old records. The Ballard yard takes the oaken frames straight from the steam box and bends them while putting them in place.

* * *

Towed by automobile trucks, a huge steel Navy lighter, built by the **Pacific Car & Foundry Co.** at Renton, Wash., took a land voyage through the town from the plant to the Cedar River where she was launched, headed up Lake Washington, through the canal and thence to Bremerton. Distance the barge traveled on land was 1¼ miles. This hull weighs 250 tons and is the second lighter to be handled in this way.

* * *

Marine Short-Shorts

Stringent waterfront restriction rules have been announced and are being strictly enforced in Seattle during the past month. Patrols and dock guards are everywhere, waterfront passes are required to enter docks, and parking near docks is prohibited. . . . In a Puget Sound yard, the former Libby steamship **David W. Branch,** now working in the Army transport service, is undergoing extensive overhauling. Berthing facilities are being increased threefold. . . . **Davis Eccles,** Oregon war industry coordinator, has suggested to **Secretary Ickes** that the Pacific Northwest's oil problem could be solved by construction of wooden seagoing barges, either towed or powered with their own diesel engines. . . . England's wartime demand for Vitamin A meant $1,500,000 to Washington and Oregon fishermen last year through their catch of soupfin shark livers. . . . **Mayor Hume** of New Westminster has announced that a Washington State shipbuilding company may establish a shipyard on the Fraser River, but no further details were given. . . . Construction started April 1 on a $2,500,000 dormitory to house 2000 workers at the Vancouver, Wash. plant. . . . Contract for a ferry service across the Columbia River to aid shipyard workers from Portland to Vancouver and vice versa has been made by the **Kaiser** interests with the **Russell Towboat & Moorage Co.** . . . Officials of the **Alaska Steamship Co.** announced April 7 that surcharges on shipping to Alaska, recently authorized by the Maritime Commission, have been cut sharply again on orders from the new War Shipping Administration. . . . War or no war, the **Puget Sound fishing fleets** are going out again for halibut, salmon and all other edible varieties.

* * *

Personal Gleanings

Announcement recently of the sinking of the 450-foot British motorship **Empire Peregrine** by a torpedo off the coast of Brazil brought a special pang of regret to **A. R. Lintner,** general manager of the American Mail Line and now with the War Shipping Administration, as he was in Chester, Pa., when the vessel was launched as the **China Mail.** . . . **Capt. C. B. Warren** of the **Matson Line** at Seattle was especially interested in hearing that the Moore-McCormack Lines had purchased the former German luxury liner **Orinoco** from the Mexican Government which seized her when the war started, as he once took a trip on her, just as war was brewing, and almost got put off at Hamburg. . . . **Edwin Owen Lovejoy,** 75 years old and a pioneer shipbuilder, died April 12 at his home in Seattle after an illness of several months. He was born on Whidby Island and, like his father, Capt. Howard Lovejoy, was connected with boat building or shipping most of his life.

News FROM THE PACIFIC SOUTHWEST

by K. M. Walker

New Control L. A. S. B. & D. D. Corporation

Through the purchase of a block of 200,000 shares of the common stock of the Los Angeles Shipbuilding and Dry Dock Corporation from the Security Company, a Los Angeles investment holding firm, **Alfred F. Smith** comes into practical control of this great shipbuilding organization.

Mr. Smith, during World War I, was head of the Columbia River Shipbuilding Co. of Portland, Oregon, which built many fine steel cargo vessels of the 8800-ton Shipping Board type. The experience gained at that time should be useful in the administration of the Los Angeles yard. He is now vice president of the Monolith Portland Cement Co. of Los Angeles.

Changes at "Calship" Yard

The California Shipbuilding Corporation is keeping up the fast pace at its big Terminal Island yard and, at the time of going to press, had launched its 23d Liberty ship. "Calship" is a division of the W. A. Bechtel Co. of Los Angeles, and this firm, because of the excellent record made by "Calship," has been awarded a contract to build for the Maritime Commission a six-way shipyard and 36 Liberty vessels in that yard. The site chosen for this new yard is Sausalito, in Marin County, California, on San Francisco Bay just about two miles northeast of the Golden Gate.

W. E. Waste, administrative manager at the "Calship" yard, has been promoted to the post of general manager of the new yard, which will be known as the Marin Shipbuilding Corporation. Mr. Waste is well and favorably known in the Bay region, being a native of Berkeley and having received his education there. He is a son of the late and much-respected Chief Justice Waste of the California Supreme Court.

James Warfield was appointed to the "Calship" post vacated by Mr. Waste.

Shipping Firm Moves to Harbor

On April 27, the shipping firm of Dodwell and Co. closed its Los Angeles office after 25 years' continual establishment, and moved to Pier 53, Outer Harbor at San Pedro.

George Bower, manager at Los Angeles for Dodwell and Co., announces that their address in future will be P. O. Box 408, San Pedro.

Calship Buys Bonds

Employees of the **California Shipbuilding Corporation** at Los Angeles had subscribed to more than $2,500,000 in Defense Bonds, the Maritime Commission announced April 23.

Although the plant's "Buy Defense Bonds" campaign reached its 100 per cent goal some time back, officials reported that the campaign is still going on. The $2,500,000 peak represents an average of more than $100 per man. This is regarded by the Commission as significant of the sincere spirit of cooperation existing in American shipyards.

In commenting on California Shipbuilding Corp. employees' achievement, **Rear Admiral Howard L. Vickery,** vice chairman of the Commission, congratulated the plant personnel, declaring that the yard had set an example that may well be followed by all others.

W. E. WASTE
General Manager, Marin Shipbuilding Division of W. A. Bechtel Co.

San Diego Going All-Out

The typical attitude of the American people in giving but luke-warm attention to matters of defense when the nation is not actually at war but swinging to thorough, two-fisted action when their country is attacked is no better exemplified anywhere than in San Diego. There is hardly another city of its size in the country where the full war effort is more clearly apparent nor where this all-out action affects a larger part of the population. Not many months ago, it was a relatively somnolent fishing town; the port was visited by a few intercoastal and transpacific freighters each week and overhead droned a few Army or Navy planes with one or two new planes from the recently established aircraft factories, which were more a source of annoyance than pride. Then came Pearl Harbor.

Now the harbor is crowded with large vessels in drab war color and unidentifiable to the civilian. The place of the freighters has been taken by great transports which slip into the harbor flying light and out again loaded to the Plimsoll mark with the tools and goods of war bound for "somewhere in the Pacific." The fleet of gleaming white tuna clippers has vanished, yet the unmistakable lines of the tuna boat stand out in the big fleet of patrol boats with anti-aircraft guns mounted on their bait tanks. The air is alive with training planes, patrol planes and with the many new bombers daily rolling off the lines of the aircraft plants. The shipyards, once busy with the heavy demand for fishing vessels, are now devoted mostly to new construction for the Navy, or to conversion of large yachts and tuna clippers to urgent war work.

All this thrilling, bustling war work is inspiring, yet it is not conducive to news. The coming and going of war vessels cannot be reported and newsy accounts of eventful voyages are not for the public print. Even the choice remarks made by the skipper when the steward's trouser button fell into the oatmeal, or what happened when the ship's cat fell down the number three hatch, must be omitted lest such items give away some secret information to the listening enemy. We are literally bursting with news but Uncle has lifted his finger for silence. Yet there are some gleanings which we will sift out from the mass.

San Diego Marine Busy

Under the dynamic guidance of Dean Johnson, who made a record during the last war at the Tacoma plant of the Foundation Company by launching a big five-masted, steam-powered auxiliary schooner every Monday and holding the trial trip every Wednesday throughout the summer of 1918, the San Diego Marine Construction Company is showing how it can be done. Since the attack at Pearl Harbor, they have launched four Navy mine sweepers and have four more under way. The fourth of these trim wooden vessels, YMS 116, took the water Monday, April 20, and the same day two more keels were laid and by nightfall the frames were in place. In response to comments on the outstanding record for a yard of its size, Dean's grinning comment was, "You ain't seen nothing yet."

At the fitting out dock the finishing touches are being put on the trim new tug San Miguel and this vessel will soon enter service for the Star & Crescent Boat Company towing the new 9000-barrel oil barge Star & Crescent No. 19 between San Pedro and San Diego. This towboat has smart seagoing lines from designs by Dean Johnson. Power is a Washington Estep diesel engine of 400 hp.

In addition to the above new construction, the yard is engaged in the conversion of several tuna clippers to naval service and the several marine railways have been kept full of repair work on fishing vessels, yachts and shore boats.

New Dredging Contracts

Case American Construction has been awarded the contract to remove 85,000 cubic yards of material to deepen the approaches to the Concrete Ship Constructors yard in National City. Removal of this spoil is necessary to permit floating of the concrete oil barges, now under construction, from the two graving docks in which they are being built and to give sufficient depth of water at the fitting out dock. These are concrete tow barges, 360 feet between perpendiculars, 59 feet 3 inches beam and a molded depth of 38 feet.

The question of what is to be done with Mission Bay, also a large expanse of uselessly shallow water to the north of San Diego Bay, has in part been solved by the recent contract given the Newport Dredging Company to dredge the Bonita Bay channel northward off Mission Beach and deposit the spoil to create a thousand-foot-long peninsula. This will be used as a recreation area and will have space to park 200 cars.

Purse Seiners Wanted In Tuna Trade

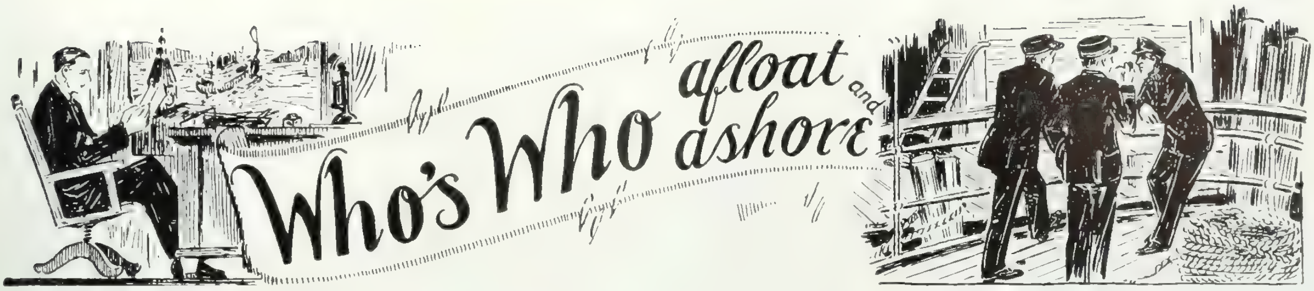
With the sardine season off the California coast ended on April 4, after having been extended by Governor Olson's proclamation, and the serious falling off in tuna fares due to Government requisition of the larger tuna clippers, the California canneries are endeavoring to induce the larger purse seiners to fit the necessary bait wells and enter the tuna trade. The fact that the Government has frozen all rope stocks and purse seine gear is extremely difficult to obtain may be an added inducement to owners to change their boat over to the tuna trade. As the purse seiners are designed with most of their buoyancy aft, to carry the heavy seine tables and the fish cargo, and have machinery forward, they are readily adaptable to tuna fishing without materially affecting their stability by the installation of a bait tank on deck aft.

Al Young Busy at New Job

Alfred W. Young, marine surveyor, on leave of absence from his position of company surveyor for the Fireman's Fund Insurance Company in San Francisco, has taken up his duties as small craft appraiser for the War Shipping Administration and has been visiting Southern California ports recently. He has quite a problem on his hands in adjusting the compensation to be paid to the owners of tuna clippers, purse seiners, river boats, barges, lighters and scows taken over by the Government on requisition and for which the owners are awaiting compensation.

Mr. Young's problem is not merely to arrive at the value of the various vessels coming under his jurisdiction but is complicated by the fact that many of the vessels were taken over while still at sea on fishing voyages and were ordered into the nearest port, Panama in some instances, with a part cargo of fish, fuel on board for a long voyage, stores, insurance premiums, and many other items of expense for which the owners are asking compensation. Many of the crews had to be sent home and fares paid by the owners, and these crews, not being paid a salary but taking a share in the catch, are clamoring for the money they would have earned had the voyage been completed.

With his long experience in handling involved claims and valuations for the insurance company, Mr. Young is well equipped to tackle this difficult problem and arrive at a fair and equitable solution. Go to it, Al, and good luck.



Who's Who afloat and ashore

Edited by Jerry E. Scanlon

M. Rhine Named To New Position

M. Rhine has been appointed manager of the Industrial Department of the General Electric Pacific District, it has been announced by R. M. Alvord, G-E Commercial Vice President. In his new capacity, Mr. Rhine will be responsible for G-E's Industrial Department activities on the West Coast, with the exception of Washington and Oregon.

Mr. Rhine was graduated from the University of California in 1904 with the degree of Bachelor of Science in Electrical and Mechanical Engineering. In the fall of that year he joined the General Electric Company at Schenectady as a student engineer, and in 1906 was transferred to the San Francisco office, where he was active in the application of electric equipment in the oil fields.

From 1912 to 1922 he worked with shipyards on the West Coast in conjunction with the Government's expanded shipbuilding program. During this period he sold the first G-E geared turbine equipment for application to a freighter; the first diesel-electric, and the first turbine-electric drive for a double-ended ferryboat, as well as the first diesel-electric drive for an oil tanker.

In 1922 Mr. Rhine was appointed an assistant sales manager of the San Francisco office, in charge of Industrial Department activities, and in 1926 was made manager of that department, the position he has held until his recent appointment.

M. RHINE, Manager, Industrial Department, California, General Electric Co.

ANDREW A. MORAN

Double Duty For Moran

Andrew A. Moran, who, in March, was named general manager of the Parr Terminal Moss Landing Company, took on new duties as port manager for Redwood City to serve during the wartime absence of **Leslie M. Rudy** in Washington.

There will be no change in the association of Mr. Moran with the Parr interests, it was announced. Mr. Moran assumed his post with the Redwood City Municipality on May 1.

Watson To Washington

Following the discontinuance of the Export Control Office in San Francisco, **Lieutenant - Commander Felthan Watson,** who was in charge, was ordered to Washington to assume his new appointment as liaison officer in the Procurement Division of the Board of Economic Warfare.

Macauley To Speak

San Francisco's celebration of National Maritime Day, May 22, will be an address by **Captain Edward Macauley** of the Maritime Commission. John E. Cushing, Pacific Coast WSA head, will be chairman of the luncheon.

Morse Resigns

Burden of duties as a member of the War Labor Board serving the public were such that **Dean Wayne L. Morse,** famed consiliator, submitted the end of April his resignation as

DEARBORN CLARK

chairman of the Pacific Coast Maritime Industry Board. The resignation was given to **Admiral Emory S. Land,** Administrator, and was in conformity with an agreement between Morse and Land at the time the board was instituted and the former was installed as temporary chairman.

Paul Eliel, head of Stanford University business school, recommended by the retiring Industry Board head, was named Dean Morse's successor.

The Maritime Industry Board was created to settle all differences pertaining to the loading of West Coast merchant marine ships by longshoremen. Purpose is to get utmost efficiency in loading and handling of ships constituting supply lines for the armed forces.

For the Duration

Significant to note is that whenever the Government reaches out to draft one of the Pacific Coast's outstanding shipping executives, there is no upset in the organization of the company affected.

When **Roger Lapham,** chairman of the board, American-Hawaiian Steamship Company, was called to Washington to serve, **John E. Cushing,** president, assumed the added duties of Mr. Lapham.

Now with Mr. Cushing in service as Pacific Coast Director of the War Shipping Administration, **Dearborn Clark,** vice president and traffic manager, is handling his own job, and the duties of Messrs. Lapham and Cushing.

Latest of the American-Hawaiian executives to be called into service is **A. B. Camp,** pier agent in San Francisco. He is now Major Camp on active duty with the Transport Service.

The Transpacific Transportation Company, Pacific Coast general agents for the Java Pacific Line, has lost **A. T. Davis** as assistant traffic manager for the duration. He is with the Army Transport Service.

Named foreign marine superintendent by the War Shipping Administration, **Captain H. P. Petersen,** Moore-McCormack's propulsion chief on the Pacific Coast, was tendered a farewell party the end of April.

His duties call for his early departure to an overseas post.

Now stationed at Fort Mason in the U. S. Army Transport Service as Lieutenant Colonel is **Melville McKinstry,** former executive assistant to the general manager of the Alaska Steamship Company.

Colonel McKinstry, until being commissioned, had been with the Alaska Steamship Company since 1933, when he became associated with the northern line with the title of superintendent of operations.

Carl McDowell, one of San Francisco's best-known and popular young shipping executives, has been appointed aide to **Eliot G. Mears,** professor of economics at Stanford University, now serving as a member of the Division of Shipping Requirements of the War Shipping Administration in Washington. Mr. McDowell is on leave from his post as assistant to Charles L. Wheeler, vice president and general manager, McCormick Steamship Company.

E. J. "Bud" Judge, for a quarter of a century in charge of the Johnson Line passenger business on the Pacific Coast, for which W. R. Grace & Co. are the general agents, resigned his post to become affiliated with the Army Transport Service in San Francisco.

Another well-known member of the Grace interests also joining the Transport Service in San Francisco was Ralph Boone.

Neil S. Laidlaw, who served with the Calmar Line in San Francisco as Pacific Coast manager, after leaving Swayne & Hoyt, when the latter discontinued their business after sale of sixteen of their vessels, is now associate director of the Division of Coastwise and Intercoastal Transport.

He is directly under Joseph B. Eastman, director of defense transportation. Mr. Laidlaw was, prior to joining the Calmar interests, freight traffic manager for Swayne & Hoyt for twelve years.

Over in his home in Berkeley, California, a well-known Pacific Coast skipper is now almost recovered from injuries and a harrowing experience during the Japanese attack on Port Darwin.

He is **Captain Frank S. Link,** who was master of an Army transport, formerly a well-known San Francisco merchant carrier.

Before the Senate for passage is a resolution to provide suitable decorations for outstanding service by men of the American Merchant Marine comparable to those awarded the fighting forces.

It is expected the Senate will readily pass the measure and then send it to the President for signature.

Filtering through the censorship at regular intervals are fragments of stories of heroism and self-sacrifice of these merchant men which register a new high in the glorious tradition of the American seaman, which rank with exploits of heroes of the Navy, Marine and Coast Guard.

NEIL S. LAIDLAW

Pacific Shipowners Move to New Quarters

The **Waterfront Employers Association of San Francisco,** the **Waterfront Employers Association of the Pacific Coast** and the **Pacific American Shipowners Association** will move their offices from the Federal Reserve Bank Building on Sansome Street to the Financial Center Building, California and Montgomery Sts., June 1.

Need of the Federal Reserve Bank for more space dictated the move of the shipping associations to the Financial Center Building, where they will take the entire third floor.

With the Waterfront Employers Association will move the organization's accident prevention bureau as well as their extensive library of maritime labor relations files, said to be the largest in the world.

The associations employ a staff of 50 members and have branch offices in other Pacific Coast shipping centers.

Approximately 7000 square feet will be required to house the organizations in the new offices.

Waterfront Employers Association is headed by **Frank P. Foisie. J. B. Bryant** is president of the Pacific American Shipowners Association.

The Tale of a Purser

At the April meeting, the story of **Purser John Conway** of the destruction of his ship, the San Francisco liner Ruth Alexander by Japanese bombs in Philippine waters last December, brought home to officers and members of the Propeller Club, Port of San Francisco, one of the many hundreds of tales of how merchant officers and sailors are facing death to win the war.

CAPT. FRANK WILLARTS

ROBERT FOUKE

Purser Conway's tale was a recital told modestly of how flaming death covered the ship in the first assault, then, after the escape of the vessel for a few hours, how a second attack sent the crew to the lifeboats and the liner to the bottom. Only one life was lost, a member of the engine room crew who defied the orders of heroic Captain Frank Willarts and went back to the ship to secure some belongings.

Purser Conway had just arrived in San Francisco after reaching an American port. He is "standing by" and will shortly be on the seas again.

Vital Statistics Grace Line

A seven and one-half pound girl was born to **Mr. and Mrs. Henry Muth** the last week of March. Muth is head of the Cable Department of W. R. Grace & Co. Mrs. Muth is the former Muriel Kelly, and was at one time employed by the same company.

J. E. McLaughlin, well-known purser of the Grace Line, and at present attached to the freighter Siletz, was married during his last trip in Puget Sound.

McLaughlin is known for his annual bike ride from Seattle down to Los Angeles while he is on vacation. His home is in Seattle.

New School Ship Director

Governor Olson the middle of last month appointed **C. Ray Robinson,** a Lieutenant in the Navy to succeed Robert H. Fouke, Berkeley attorney, as a member of the California Maritime Academy.

Admiral John Wills Greenslade approved Lieutenant Robinson's appointment. He was, prior to being called into active service, a Merced attorney. Fouke was appointed by former Governor Merriam.

Corporation Personnel Changes

The Cummins Diesel Engine Corporation of New York have appointed **Charles D. Cavett** as advertising and sales promotion manager.

Mr. Cavett has been on the copy staff of Spencer W. Curtiss, Inc., Indianapolis, industrial agency, for the past three years, and prior to that time was engaged in newspaper and publicity work in Ohio, California and New York.

At the annual meeting of stockholders of Stewart-Warner Corporation on April 8, **Frank A. Hiter,** vice president and general sales manager of

PURSER JOHN CONWAY

O. B. KIBELE
Superintendent of Western Pipe & Steel Co. shipyard

Stewart-Warner Corporation, was elected a director, replacing **Thomas T. Sullivan,** retired. Directors reelected are: **Robert J. Dunham, Irving S. Florsheim, James S. Knowlson, Frank A. Ross, Ralph M. Shaw** and **Gardiner Symonds.**

Clarence Yenny, Los Angeles, manager for the Transpacific Transportation Company, reports that operations are now in full swing in the Royal Netherlands Steamship Company's new service between Dutch Guiana and United States Gulf ports, carrying bauxite.

The move by the Netherlands concern marked one of the first new routes established by any marine transport line since the war.

John "Jack" Conrey, who was with the American-Hawaiian Steamship Company's Los Angeles offices for nearly 20 years, has resigned and is now with the Western Carloading Co.

H. R. "Hap" McLaurin, widely known in steamship circles, has joined the Republic Carloading & Distributing Company as district freight agent, with headquarters in Los Angeles.

"Hap," as he is known in Pacific Coast shipping circles, is best remembered as identified for years with the W. R. Grace & Co. interests.

His father, the late M. F. McLaurin, was also engaged in shipping, and was the first agent for the Grace interests in Southern California, before they opened their own offices.

An Oldtimer Back at Shipbuilding

The many friends of O. B. Kibele will be glad to learn that this dynamic shipbuilding veteran of World War I is back at his old post in the South San Francisco yard of the Western Pipe & Steel Company, where he made great records turning out Shipping Board "8800-tonners" in 1918 when that yard was operating under the name Shaw-Batcher Shipbuilding Company.

Kibele is right in his element as superintendent of this shipyard. His office is in the heart of the yard, right alongside of the shipbuilding ways, where he is in constant touch with expediters, coordinators, foremen and leadermen, who can come to him and get prompt decisions on all of their problems. Fabrication and erection is being speeded up materially; all four ways are producing, and outfitting is showing progress.

New Harbor Commissioner

Successor to E. A. McMillian as member of the State Board of Harbor Commissioners in San Francisco is **Harry See,** San Francisco business manager of the Brotherhood of Railroad Trainmen. He was named by Governor Olson.

Mr. McMillian resigned to take a Federal Government labor mediator's post in Washington. Salary of Mr. See is $3000 per year.

Turbine Plant Working Around the Clock

Production of steam turbines to drive American merchant ships was recently put on a three-shift, around-the-clock basis in the new Merchant Marine Works, Lester, Pa. The plant is owned by the Government's Defense Plant Corporation, but was built and will be operated by the Westinghouse Electric and Manufacturing Company.

A new record in heavy industrial plant construction was completed January 16, when the first 45 workers in the big plant started up their machines. Inauguration of three-shift operations, as machinery was still moving into the plant, brought the total number of producing workers to 75. Eventually, the plant will employ 2500.

Completion of the construction job in record time has meant the handling of an average of 200 tons of steel a day, and on peak days as much as 460 tons were erected. At times, more than 1000 men were at work on the construction job. The big factory covers a floor area of 615,000 square feet and is 1400 feet long.

Since last October, an intensive selection and training program has been under way to provide the skilled man power needed to produce the huge but finely-machined turbine parts that will provide power for many of America's vital merchant ships. Machinery and machine tools for the new turbine plant were ordered before actual plant construction was started. Thus all three major elements of the defense project —the men, the tools, and the plant— were ready as nearly simultaneously as possible for an all-out production schedule.

The first machines were set in place December 26—147 days after ground was broken—and while workmen were still sheathing the walls of the factory and 200 electricians were installing the miles of wire and the thousands of necessary switches and controls.

Inspectors of Hulls and Boilers Wanted by Government

The Federal Civil Service Commission is again recruiting inspectors of hulls and boilers for the Bureau of Marine Inspection and Navigation of the Department of Commerce. Sufficient persons to meet today's wartime needs are not on the Commission's employment lists for these positions. Under the terms of the new announcement, no closing date for receipt of applications has been set, so that all persons wishing to apply may have the opportunity. No written test will be given, but applicants will be rated on their experience and other qualifications as shown in their applications.

Necrology

A Pioneer Good Neighbor

James Otis, export and import merchant, dean of the world trade community of San Francisco, died on March 29 at the age of 78. In 1887 he began selling United States products in Central America, and after that he visited Central and South America regularly for nearly fifty years.

In 1892 he founded Otis, McAllister & Co., San Francisco, which has been a leading factor in the coffee industry, serving United States and Canadian consuming markets.

About seven years ago, Mr. Otis established the Agencias Unidas, S. A., direct selling agencies for United States products, in Costa Rica, El Salvador, Nicaragua and Guatemala, with associated offices in Panama and Venezuela.

James Otis, merchant adventurer, was a pioneer in the use of the airplane for business trips. By 1920 he had hundreds of flying hours to his credit, and soon he had his own plane. In 1933 he celebrated his 70th year with a 20,000-mile flight around South America, via commercial air lines.

To him, world travel was nothing unusual. James Otis at the age of 4 crossed the Pacific to Hongkong on the Pacific Mail's side-wheel steamer Colorado. During his business career, he made many trips into the interior of tropical countries, often on muleback. He girdled the globe several times.

His father, James Otis, St., mayor of San Francisco from 1873 to 1875, came to California in 1849.

Surviving are his widow, Mrs. Fredda Davison Otis; a daughter, Mrs. Warren W. Smith of Caracas, Venezuela; his sister, Lucy Otis McAllister; and six grandchildren.

Dean of Marine Insurance

Ranks of men who pioneered marine insurance to its present high state were broken with the death in San Francisco, April 16, of **Louis Rosenthal,** marine insurance manager for the Matson Navigation Company.

One of the deans of West Coast maritime insurance, Mr. Rosenthal was 78. He had been engaged in the insurance business with shipping for more than half a century in this port.

During the period prior to joining Matson, Mr. Rosenthal maintained his own general offices, representing as general marine agent five large worldwide firms. He was as well known in London, Hongkong, Honolulu and New York marine and shipping circles as he was in the city of his adoption.

Noted Shipmaster

Captain A. B. "Andy" Clark, owners' representative on the Pacific Coast for the Donaldson Line, died suddenly March 27 of a heart attack on the train en route from Los Angeles to Vancouver, B. C.

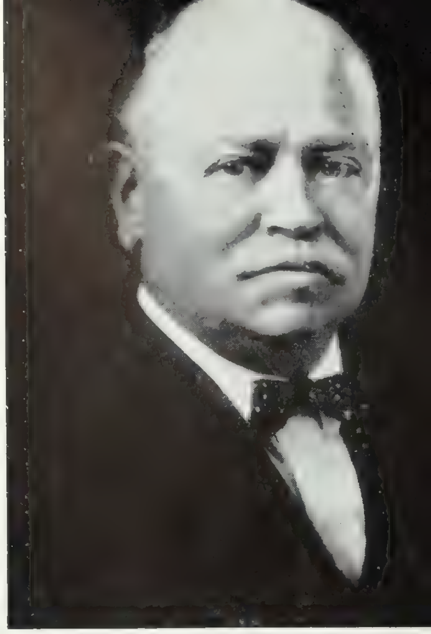
Widely known and liked by the shipping fraternity along the Pacific Coast, Captain Clark made his home in Vancouver, B. C., since he left command of a Donaldson Line ship to become owners' representative on the coast for almost 20 years.

Financier and Shipbuilder

John A. McGregor, one of the grand old men of Pacific shipping, shipbuilding and San Francisco's civic and welfare life, passed on April 24 at the age of 81.

Since 1906, Mr. McGregor had resided in San Francisco, and from that date to 1918, he was president of the Union Iron Works. He served as a dollar-a-year man for the U. S. Shipping Board in World War I; was head of the fourth Liberty Loan drive; and was a member of the Board of Supervisors.

All during his industrial life, Mr. McGregor found time to promote the welfare of his adopted city. He was president of the Boy Scouts of San Francisco; director Region 12, Boy Scouts of America; treasurer San Francisco Symphony; president Boys' Aid Society; and chairman Board of Trustees, Calvary Presbyterian Church.



JAMES OTIS

A son, Campbell McGregor, and a daughter, Mrs. J. Lewis Luckenbach, wife of the chairman of the American Bureau of Shipping, survive. He was a native of Montreal.

Chandlery Executive

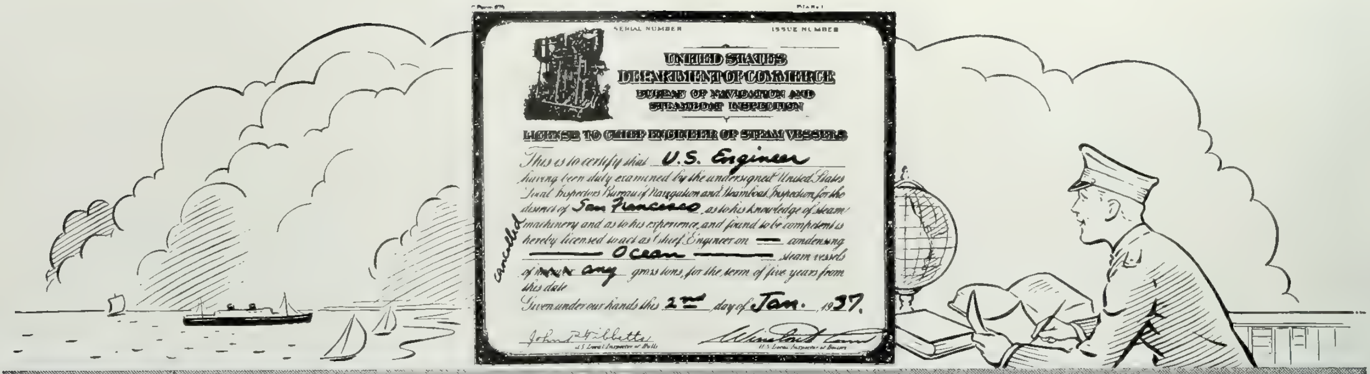
The death of **Charles J. Hendry,** 48, on April 11, at his Woodside, Calif., estate, came as a distinct shock to the hundreds of friends and business associates of the retired president of the ship chandlery firm which bears his name.

His father, the late George W. Hendry, was one of the founders. Mr. Hendry is survived by his widow, Vera. He left an estate appraised at $1,000,000 with large bequests to relatives, educational organizations, and charities. Mr. Hendry was a native of San Francisco.

Sales Manager

Alf O. Gautesen, vice president in charge of sales of Bludworth, Inc., 92 Gold Street, manufacturer of marine instruments, died April 2 in the Methodist Episcopal Hospital, Sixth Street and Seventh Avenue, Brooklyn. He was 33 years old and lived at 1039 Seventy-ninth Street, Brooklyn.

Mr. Gautesen was born in Norway. He was a graduate of New York University and of Stevens Institute, Hoboken. Surviving are his wife, Mrs. Virginia Gautesen; a son, Frederick A. Gautesen; a sister, Miss Alice Marie Gautesen, and his mother Mrs. Gunval Gautesen.



SERIAL NUMBER ISSUE NUMBER

UNITED STATES
DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION AND
STEAMBOAT INSPECTION

LICENSE TO CHIEF ENGINEER OF STEAM VESSELS

This is to certify that U.S. Engineer having been duly examined by the undersigned United States Local Inspectors Bureau of Navigation and Steamboat Inspection for the district of San Francisco, as to his knowledge of steam machinery and as to his experience, and found to be competent is hereby licensed to act as Chief Engineer on — condensing — Ocean — steam vessels of any gross tons, for the term of five years from this date

Given under our hands this 2nd day of Jan. 1937.

Cancelled

U.S. Local Inspector of Hulls

U.S. Local Inspector of Boilers

Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

TURBO-ELECTRIC DRIVE

COMPARISON OF DC AND AC MACHINES
PARALLEL OPERATION OF GENERATORS

In the following discussion, several considerations are accepted as understood without further explanation. A marine plant should have two or more auxiliary generators, so that one may be overhauled without losing power. Also, load conditions are different in port and at sea, and it is uneconomical to run a large generator at light load as relative losses are high. Thus two or more must be run in parallel at times. Main propulsion generators are too large to warrant duplication and only one is used on single screw tankers. Auxiliaries are, however, in duplicate, and must occasionally be paralleled. To transfer load from one machine to another without dropping the load requires this operation.

Generators are driven at nearly constant speed by engines or turbines. These prime movers have speed governors which automatically and quickly open or close the steam to hold speed constant at no load and all loads up to maximum capacity. Speed will drop some as load is applied. This is called the regulation drop or droop. It should be from four to ten per cent speed drop as load goes from zero to full rated value. Some generators, like the Woodward type used on diesels, have an adjustment for this speed drop and it can be set for zero or up to 15 per cent. Turbine governors usually are adjusted for about four per cent. Speed regulation is a very important factor in parallel operations.

The bus bar is the set of copper conductors on the switchboard to which any generator may be connected, and from which all the feeders to motors and lighting circuits take their power.

The incoming machine is the generator which has been shut down, and we propose to start it, adjust it, and connect it to the bus bar, then make further adjustments so that it carries some of the load on the bus bar.

The running machine is already on the bus bar and carrying load.

Procedure in Paralleling Machines

DC Generators. This is familiar to all marine engineers and will only be outlined.

1. Bring up to speed, on the governor, hand throttle wide open.

2. Bring up to 5 or 10 volts more than the bus bar voltage, 5 volts for 125-volt machines, 10 volts for 250-volt machines. This is done by turning field rheostat to the left.

3. Make sure the switch is open. Close the circuit breaker. Again check bus bar volts and generator volts; then close the switch with a quick strong motion so that it goes all the way home on first move. Never close a switch gently or timidly.

4. The ammeter will show load current. Adjust this to the proper share of total bus bar load by cutting out field rheostat to the left to raise current, to the right to lower. The governor will automatically adjust steam or fuel to match load and hold speed.

AC Generators. The first step is the same as that for dc, namely:

1. Bring the machine up to speed, on the governor, hand throttle wide open. It is now running at full speed, no load, no voltage.

From this point the procedure will differ with different plants according to the arrangement of the switchboard and equipment. In general, it is accomplished as follows:

2. Bring voltage of generator up to normal by cutting out exciter field rheostat, turning it to the left. At this point, the generator voltage and the rheostat should be cut all out, to the left or to a marked point corresponding to 140 or 150 volts dc of the exciter. The regulator inserts resistance as fast as it is cut out on rheostat holding generator field volts down to no load full ac volts value of about 50 to 70 volts dc.

3. Check to see that air circuit breaker[1] is open. Close the disconnecting switches. The generator is now ready to be synchronized.

4. Read bus bar volts, then read

volts on incoming generator. They should be the same. If not the same, adjust voltage regulator until incoming voltage matches bus bar volts.

5. Two synchroscope switching handles are furnished for the switchboard. They are marked "Run" and "Incoming." Insert "Run" handle in synchroscope receptacle of machine on bus bar, and other in receptacle of incoming machine. Turn each handle in proper direction as indicated on receptacle. This connects synchroscope to the bus and incoming machine. It will be revolved at a speed proportional to the *difference* in speeds of the two generators and in a direction indicating whether the incoming machine is too fast or too slow.

Adjust the governor of the engine or turbine to slow down or nearly stop the revolving synchroscope. Place hand on circuit breaker preparatory to closing it, but do not close yet.

Watch slow motion of synchroscope, and when its needle points exactly to the zero or top point, close the breaker smartly. This puts generators on the bus bar. Synchroscope stops and the two handles should be removed.

The ammeter may show current but the wattmeter will show zero load. The current is wattless and at zero power factor.[2]

If the breaker is closed at any other point except the top or zero point of synchroscope, a heavy current will flow and a powerful jar or bump will be felt, its magnitude depending on how far from the zero the breaker was closed. This represents the forces of the generators pulling into synchronism, a quick acceleration of one and deceleration of the other to bring them exactly into step.

6. The generator is now ready to take the load. Adjust the speed governor toward increasing speed. Instead of a speed increase, there will be a load pick-up and governor will open steam or fuel correspondingly. Most ac marine plants have a switch on the board, which controls a small motor connected to the speed adjusting lever of the speed governor, so that the governor may be adjusted from the board while watching the meters.

The running generator will drop load as the incoming generator picks it up, because of a very slight increase in speed within the regulation of the speed governor.

Adjust governor to the proper share of load as indicated by the wattmeter, not the ammeter.

7. Adjust voltage regulator to balance the power factor between the generators. It should not be necessary to adjust voltage regulator often, as once set for all generators, there should be no occasion for changing it.

To Remove AC Generator From the Line

Adjust governor toward the decrease speed until the wattmeter reads nearly zero. Trip the breaker open. Open disconnecting switches. Turn field rheostat to all-in position. This may not be necessary as it is quite proper to allow voltage regulator to have full charge of generator and exciter fields, and in regular operations not to move rheostats.

Effect of Generator Speed

DC Generators. To drop speed will drop some load because of drop in generator volts. This can be compensated for by cutting out field rheostat, and thus can run at lower speed, as long as speed is not too low to point where there is no further rheostat resistance to cut out. Exact matching of generator speeds is not necessary.

AC Generators. Speeds must be and will be exactly the same, just like two gears running together. Cannot drop speed of one without an equal drop in speed of the other. Speeds will be different if no poles of generator are different.

Effect of Engine Trouble or Stalling

DC Generators. If speed suddenly falls due to loads of steam or fuel, load current falls off to zero, reverses and the generator becomes a motor. The reverse current in the series field causes a bucking or reducing action on main field, which causes machine to try to speed up, drawing a huge block of current from the bus bar. If this fails to trip breakers, machine will overspeed and may damage itself. The reverse current may cause generator to reverse polarity, so that when started up again, it causes voltmeters to read backward. Many boards are equipped with reverse current attachment on

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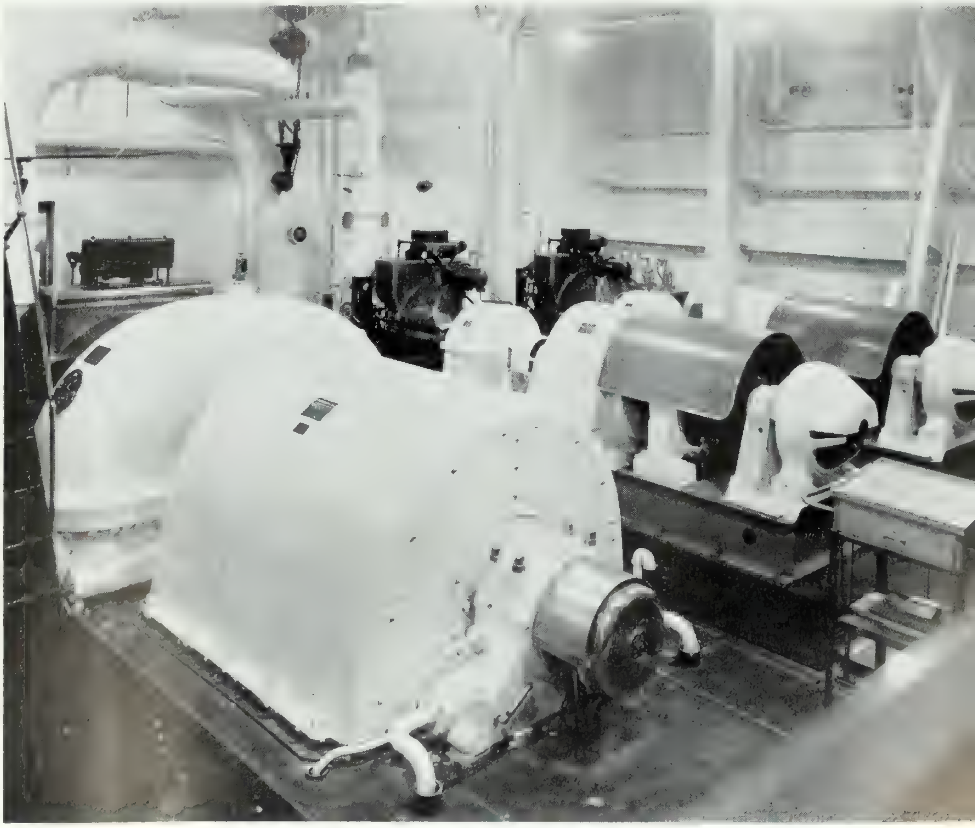
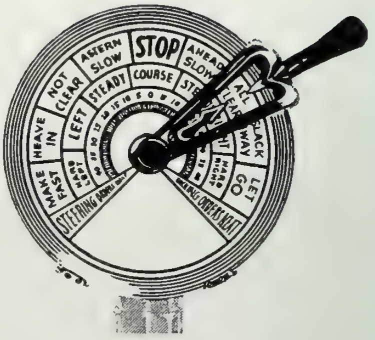


ENGINE ROOM of large turbo-electric drive tanker showing main propulsion generator in foreground and two auxiliary generating sets at right

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by *"The Skipper"*

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

RULES OF THE ROAD

PART VI—THE MEETING SITUATION

In the previous articles of this series, we discussed and clarified the principal points of collision law, sound signals used in fog and in clear weather, and the various navigation lights used on different types of vessels.

This month the article will be devoted to a clarification of the meeting situation.

INTERNATIONAL RULES,

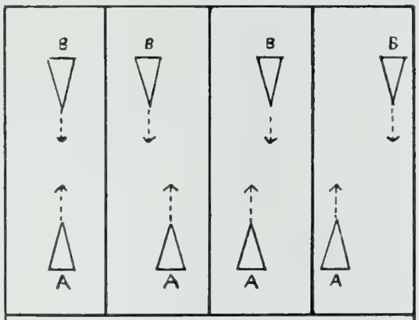
Article 18, International Rules states,—"when two steam vessels are meeting end on, or nearly end on, so as to involve risk of collision, each shall alter her course to starboard, so that each may pass on the port side of the other." The article continues with a rather redundant definition of "end on or nearly end on" as applied to the meeting situation. The Federal court, in the case of Sabine Sun (1927) 21 F (2d) 121, has clarified the statutory wording of the phrase to mean, "If steam vessels are approaching as much as 1½ to 2 points, then they are considered as meeting head and head, and are bound to pass port to port."

Which Vessel Has the Right of Way?

The obligation to alter course and to signal in the meeting situation is mutual, and neither vessel can sustain the plea that she was waiting for the other vessel to change course and signal first.

Under Article 28, International Rules, all whistle signals in this situation are *helm signals;* in other words, one or two blasts means that the vessel sounding the signal is actually changing her course to starboard or to port, respectively. To sound the signal without changing course, or to change course without giving the appropriate signal would be legitimate course for a vessel being held at fault in a subsequent collision. No answering signal is required unless the helm is also used.

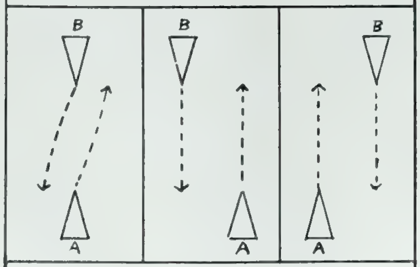
Figure 1.



Situation #1. Situation #2 Situation #3 Situation #4

MEETING SITUATION UNDER INTERNATIONAL RULES

Figure 2.



Situation #1. Situation #2. Situation #3

MEETING SITUATION UNDER INLAND RULES

FOUR MEETING SITUATIONS UNDER THE INTERNATIONAL RULES

Figure 1. Situation 1.

Steam vessels A and B are meeting directly head on. The burden is upon both vessels to alter course to the right and signify same by one blast of the whistle. If, after passing clear, either vessel desires to return to her original course while they are still in sight of each other, she shall signify the change of course by the proper whistle signal; this last whistle signal is usually dispensed with by seamen on the grounds that risk of collision has passed and its use would be superflous; however, this omission has no legal sanction.

Figure 1. Situation 2.

Here the vessels are approaching at less than two points, they shall pass port to port and signify any necessary change of course as described in Situation 1. Should the vessels be so far to port of each other as to have ample clearance, then no whistle signals will be required because no change of course is made. This is usually the most common and practical way of meeting and passing on the high seas. Both vessels alter their course in ample time so that whistle signals are unnecessary. In connection with this statement, it is well to recall a definition given in a previous article of this series: the phrase "in sight of each other" in relation to the use of whistle signals is defined to mean, "when they are sufficiently near each other to make the use of whistle signals necessary to an understanding of each other's course."

Figure 1. Situation 3.

Here the vessels are only slightly to starboard of each other, less than two points; this is the meeting situation considered as fraught with the greatest peril. In accordance with Article 18, they are meeting "nearly end on" and are required to alter course to starboard in order to pass clear of each other on the port side. This maneuver should always be executed in sufficient time for the other vessel to be aware of your intentions. Should both vessels hold their course and speed (as is sometimes done in this situation), until they are getting close together, then suppose that vessel A decides to haul a little more to the left in order to clear the other (in violation of Article 18); at this precise moment vessel B decides to obey the law and she hauls to the right. Then a very hazardous situation develops. Vessel B is obeying the law, and the officer on the bridge of vessel A, who has placed himself above the law, will be in a very embarrassing predicament and have to act rapidly in order to avoid collision, probably putting his rudder "hard right," or possibly having to continue "hard left" and make a complete round turn.

Figure 1. Situation 4.

Here both vessels are so far apart, starboard to starboard, that they will pass clear of each other without any change of course being made. In this case, both vessels would maintain silence and hold course and speed.

In conclusion, there is no answering signal in the International Rules; the one- or two-blast signal can only be given by vessels in sight of each other when a change of course is made, even one degree. It is doubtful if the two-blast signal could ever be legally used by meeting vessels under the International Rules; any change of course necessary to clear a meeting vessel must be to the right in accordance with Article 18, and that *would require* the one-blast signal.

QUESTION

Has any vessel ever been held at fault under the International Rules in a subsequent collision solely for failure to announce by whistle signal a prior change of course while in sight of the other vessel?

ANSWER

Yes, there are many cases of this kind on record; here are two typical cases.

1. The Anselm, 10 Aspinall M.C. (N.S.) 438.

The Anselm sighted the Cyril about two miles ahead and a little on the starboard bow while in the Para estuary of the River Amazon. The Anselm changed course to the right but *failed* to give the whistle signal. A few moments later, Anselm observed the Cyril apparently hauling to the left, the Anselm changed course more to the right and gave one blast of the whistle. Collision followed and the Anselm was held at fault for failure to sound one blast when she first changed course.

2. The Malin Head, 11 Aspinall M.C. (N.S.) 264.

The Malin Head sighted the Corinthian ahead in the St. Lawrence River. The Malin Head gave one blast and changed course to the right and steadied up. The Corinthian failed to go to starboard. The Malin Head changed course more to the right but this time *failed* to give the one-blast signal. Collision followed and the Malin Head was held at fault for failure to sound the one-blast signal at her second change of course.

Both of these decisions prove that the only safe rule is, when in waters where the International Rules govern, never change course in sight of another vessel without sounding your whistle.

MEETING SITUATION IN INLAND WATERS OF THE UNITED STATES

There is a marked difference in the requirements and the meaning of the signals used in the meeting situation in waters governed by the Inland Rules, Article 18. Under these rules, it is required that meeting vessels signal *and answer* each other, signifying the side on which they are to pass.

Pilot Rule 3 requires these signals to be given whenever vessels are in sight of each other, and when passing or meeting, whenever they are within one-half mile of each other.

Figure 2. Situation 1.

Vessels A and B are meeting head on; before they arrive within one-half mile of each other, one of them shall sound the one-blast signal, meaning that a port-to-port passing is proposed. The other vessel shall answer with one blast, and then the two vessels will pass each other port to port, in accordance with Article 18, Rule 1. When each vessel is clear of the other and desires to return to her original course, *no additional signal is required*. This last provision differs from the International Rules, because under the Inland Rules the passing signal *is not* a helm signal, but rather an agreement to execute a certain maneuver.

Figure 2. Situation 2.

Although in this situation the vessels are so far apart that it is not necessary for them to change course, they shall, upon sighting and approaching within one-half mile of each other, sound and answer the one-blast signal, meaning that they intend to pass port to port.

Figure 2. Situation 3.

The vessels are so far apart that it is safe for them to pass starboard to starboard without any change of course. They shall, upon sighting and approaching within one-half mile of each other, sound and answer the two-blast signal, meaning that they agree to a starboard-to-starboard passing.

Should they, however, be meeting each other with insufficient distance between them on the starboard bow, then they are meeting "nearly end on" and they must pass port to port as outlined in Situation No. 1.

Danger Signal:

Should, in any of these situations, either vessel fail to understand the signal or intention of the other vessel, then the danger signal, not less than four short blasts, must be given as prescribed in Article 18, Rule 3. After sounding the danger signal, signifying a misunderstanding, both vessels shall reduce speed and stop if necessary until the proper signals are given and acknowledged. Cross signals, that is, answering one blast with two, or answering two blasts with one blast are never permitted.

QUESTION

How do the provisions of Article 18 of the Inland Rules apply to vessels approaching each other in a narrow winding channel, when they first sight each other at more than two points on the port and starboard bow, respectively?

ANSWER

Article 25, the narrow channel rule, requires each vessel to keep to the right-hand side of the channel, when safe to do so. This, of course, would require a port-to-port passing in conformity with Article 18, Rule 1. In determining how vessels are approaching each other in narrow channels, their general course in the channel alone must be considered, and not the compass course they are steering at any particular time. Regardless of what their respective relative bearing may be upon first sighting each other, they are governed by the rules for meeting vessels as prescribed in Article 18, Rule 1.

QUESTION

When do steam vessels, obscured by a high bank and approaching each other from opposite sides of a bend in a channel, sound the passing signals?

ANSWER

If the banks of the stream are such that an approaching vessel cannot be seen for a distance of one-half mile, then the steamer approaching such bend shall sound one long blast, about 10 to 13 seconds in duration. This sig-

(Page 88, please)

PROBLEMS ANSWERED *by "The Chief"*

(Continued from page 77)

circuit breaker so that the moment a small amount of current flows in the wrong direction, the breaker opens, cutting the machine free from the bus bar when it slows or stops, as determined by the engine.

AC Generators. Sudden reduction or failure of power from the engine drops load; wattmeter will drop to zero and perhaps reverse. Power will reverse although current and voltage both read up scale on the meters. Only enough power will flow from the bus bar to generator to motor at normal speed. It carries the engine or turbine along at normal speed, and the only indication of stoppage of engine power will be the reversal of the wattmeter, and the engineer may never know. Of course, all bus bar load is thrown on generators not in trouble, which may overload them, tripping breakers. Some switchboards are fitted with reverse power wattmeter or relays which trip the breaker as soon as any power flows from bus bar to generator.

Adjustment of Voltage

DC Generators. Voltage is adjusted by moving generator field rheostat.

AC Generators. Voltage is controlled automatically by voltage regulator, which may be adjusted to hold desired value.

Adjustment of Power Factor

DC Generators. There is no adjustment corresponding to power factor. Voltage adjustment transfers load and current from one machine to the other.

AC Generators. Switchboards are equipped with a power factor indicator on each generator panel. No transfer of load takes place when voltage is adjusted. Only governor speed adjustment can transfer load from one unit to another.

Voltage adjustment causing one unit to try to have more voltage than the other causes a wattless current to circulate in the parallel connections and bus bar, which has the effect of bucking down the unit with too much field and boosting the machine with too little. Thus the ammeter for both machines will increase reading even with no increase in wattmeter and load. With high current and no effect on wattmeter, we have the term wattless current. The power factor indicator of the unit having a tendency to *increase* volts or stronger field will move toward the *lagging* direction; the other will improve toward the top or 1.0 power factor point and may go on to the lead side of the indicator.

Thus, voltage regulators are adjusted to get correct bus bar voltage, and to bring the power factor indicators to about the same reading. When they are the same, the reading is the power factor of the load.

Synchronizing

DC Generators. There is no operation with dc comparable to synchronizing with ac units.

AC Generators. This is an operation which matches the rapidly alternating voltage of the incoming machine with that of the running generator. When they both reach the positive maximum and sweep down through zero volts, into the negative maximum exactly together, they are synchronized and may be thrown together in parallel. It is like putting two rapidly spinning gears into mesh.

The synchroscope is in effect a pair of motors connected together through a differential gear to the pointer or needle, which thus turns only if the speed of the motor is different. The two motors are connected to the incoming and running generators, one to each.

SUMMARY

Principal Differences of AC Plant From the DC Plant

1. *Load* is transferred *only* by *governors*.
2. *Rheostat* transfers circulating or wattless current, affect *only* power factor, *not* load.
3. Synchronizing required, synchroscopes needed.
4. Voltage regulators required; power factor meters needed.
5. Ammeters do not mean power; hence wattmeters required.
6. Voltage usually 480 to 2400 volts; hence no live parts are exposed on switchboard, which is dead-front construction. These voltages are dangerous to touch.

Our next article will show the ac circuits and list the principal ac equipment of the modern oil tankers.

---

[1] Air circuit breaker is the device which automatically opens on short circuit or overload. The word *air* is used here to distinguish from *oil* circuit breaker as used on shore plants. The oil breaker is a switch submersed in oil. The air breaker is in the open air. Oil is not much used in marine plants because of the fire hazard.

[2] Refer to the April issue of Pacific Marine Review for discussion of power factor.

Sperry

AT SAN FRANCISCO

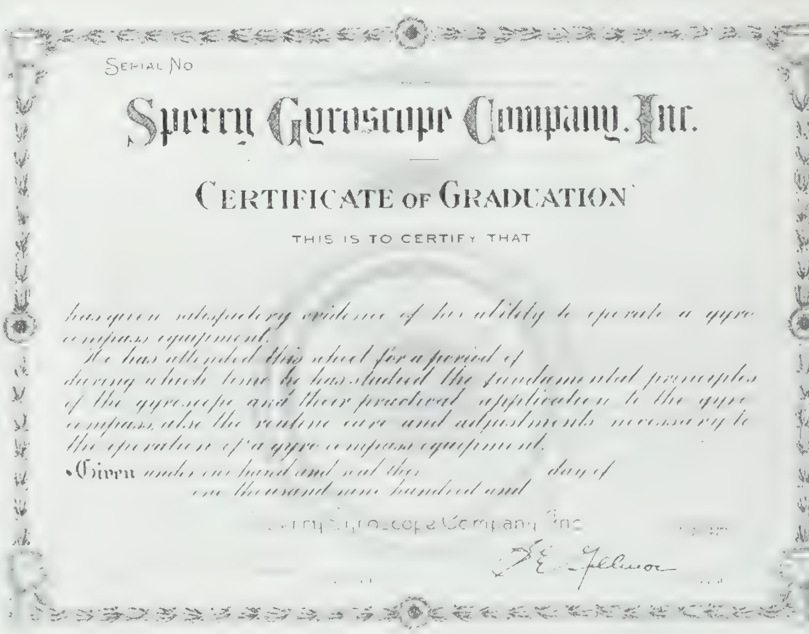
A recent visit to Sperry Gyroscope district headquarters revealed great activity and some interesting new equipment. According to J. F. McConkey, genial and efficient district manager, the war business of Sperry is growing so fast that they can hardly keep track of the items.

In gyro compasses, as of three years back, fifty a year was good business. Sperry is now delivering 90 and will soon be delivering 100 each month. Other Sperry marine equipment, such as course recorders, gyro pilots, steering gears, etc., have shown proportionate growth in output. The growth in airplane equipment output is astronomical.

An interesting recent addition to the gyro shop at the San Francisco office is the testing swing for gyro compasses, by means of which the compass can be subjected to a swinging motion equivalent to the rolling motion of a ship at sea.

As will be noted in the illustration, this consists of a light metal frame hung from the ceiling in such a fashion that it is free to swing. When set in motion manually, this frame is kept swinging to a predetermined angle by means of a spring and a magnetic solenoid controlled by a mercury tube make-and-break contact.

J. F. McCONKEY



Serial No

Sperry Gyroscope Company, Inc.

CERTIFICATE OF GRADUATION

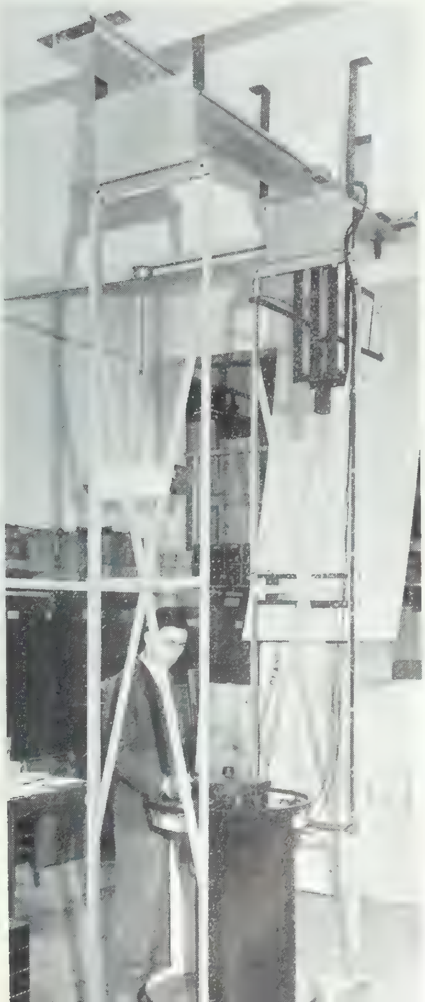
THIS IS TO CERTIFY THAT

has given satisfactory evidence of his ability to operate a gyro compass equipment.

He has attended this school for a period of during which time he has studied the fundamental principles of the gyroscope and their practical application to the gyro compass, also the routine care and adjustments necessary to the operation of a gyro compass equipment.

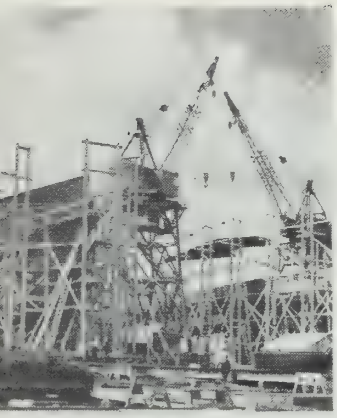
Given under our hand and seal this day of one thousand nine hundred and

Sperry Gyroscope Company Inc



LOWER LEFT: The new compass testing unit, at Sperry's San Francisco headquarters, which simulates motion of a ship.

LOWER RIGHT: Instructor and class studying the Sperry gyro compass. Since January 1, this school has graduated nearly 200 men and one woman.



On the Ways - SHIPS IN THE MAKING

West Coast Yards Lead in "Liberty" Program

According to a report of the U. S. Maritime Commission on April 27, the Pacific Coast "Liberty" yards are making the greatest progress in the construction of Liberty ships, based on the month of March.

In that month, the West Coast yards with a total of 31 ways in operation, laid 13 keels, launched 12 ships and delivered 11 into service; the Gulf Coast yards with 19 ways laid no keels, launched two ships and delivered none; the Atlantic Coast yards with 29 ways laid nine keels, launched eight ships and delivered five.

The Richmond Shipbuilding Corporation, Richmond, California, did 13 per cent more work in March than its contracts called for, while the Oregon Shipbuilding Corporation gained 12 per cent. Alabama Dry Dock & Shipbuilding Co. was third in percentage of gain with 9.34, and California Shipbuilding Corp., fourth with 9.20.

The Commission also stated that the program for 312 Liberty ships was 40.9 per cent complete. On this basis the Oregon yard led the nation with 67.69 per cent accomplishment; Richmond Shipbuilding Corp., second with 49.8 per cent; "Calship," third with 47.5.

"Oregonship" Presented First Flag of Merit

Captain Edward Macauley presented the Oregon Shipbuilding Corp. the first award of the U. S. Maritime Commission's Flag of Merit in Portland, Oregon, on April 27 for the most outstanding accomplishment during the first quarter of 1942 in the production of Liberty ships.

On April 18 the following telegraphic notice was sent to Edgar F. Kaiser, vice president and general manager of the Oregon Shipbuilding Corporation, by Admiral Howard L. Vickery, chairman of the Commission's Board of Awards:

"As chairman of Maritime Commission's Board of Awards, I wish to advise that the Board has awarded the Flag of Merit to Oregon Shipbuilding Corporation for the most outstanding accomplishment during first quarter of 1942 in the production of Liberty type ships. This yard through its management and with the cooperation of labor has during this quarter led all other emergency yards which began operation at same time. Commissioner Macauley will present flag to your yard about April 27. You will be advised further concerning definite time for presentation ceremony."

The Oregon Shipbuilding Corporation plant is one of the original emergency shipyards authorized by the Maritime Commission in February, 1941. It has contracts for the construction of 131 Liberty ships.

The Maritime Commission's merit design, which was recently approved by the Commission, carries the merit "M" and a gold star on a blue background to be flown below the new Maritime Victory Eagle flag. It is the plan of the Commission to award the flag to those shipyards and manufacturing plants which show outstanding progress in production.

Panama City Yard To Build "Libertys"

A contract for a six-way yard at Panama City, Florida, and 33 Liberty ships was awarded to **J. A. Jones Construction Co.,** Charlotte, N. C. on April 2.

This yard will be the sixth shipyard constructing Liberty ships on the Gulf Coast.

U. S. To Double Sub Fleet

In April, Congress speedily approved the construction of 200,000 tons of submarines at a cost of $900,000,000, due primarily to the success of American undersea craft against Japanese troop and supply convoys.

The bill, introduced in the House by Representative Carl Vinson, will provide 125 of the present 1500-ton cruiser type submarines and is the second naval expansion plan approved by Congress since the U. S. was plunged in war.

Tug Contract For Coos Bay

On April 23, receipt of contract for the construction of three rescue tugs for the Navy was announced by **Hillstrom Brothers** of North Bend, Oregon. The tugs will cost $121,000 each and makes the second Navy contract to be given to a Coos Bay yard, the first going to Kruse & Banks.

Two New S. F. Yards Await Contracts

Two small boat building plants were incorporated in San Francisco during April, to be known as the **San Francisco Shipbuilding Corporation** and the **Union Shipbuilding Company.** Both companies were confident that they would be given contracts by the Government to construct small craft in their Bay yards, the sites of which are being kept secret for strategic reasons.

R. D. Lang, president of the San Francisco Shipbuilding Corporation, is a well-known executive of the Lang Realty Corporation of San Francisco. His brother A. J. Lang is vice president of the shipbuilding company.

The directors of the Union Shipbuilding Company are Albert Axelrod and Julien Bauer, San Francisco attorneys.

U. S. S. Endicott

SLIDES down ways at a Pacific Coast shipyard

Six Mine Sweepers To Lynch

A $1,000,000 contract for the construction of six 103-foot mine sweepers for the U. S. Navy was awarded to the **Lynch Shipbuilding Company** of San Diego, California, on April 26. Scheduled for delivery by September 15, construction was started immediately.

Federal Delivers

Delivery more than five months ahead of the contract date was made April 28 of the 1630-ton destroyer Lansdowne to the United States Navy at the Navy Yard in Brooklyn by the Federal Shipbuilding and Dry Dock Company, a subsidiary of the United States Steel Corporation.

Lansdowne was launched February 20, 1942, at the Federal Shipyard in Kearny, New Jersey, in the same ceremoney which sent down the way the destroyer Duncan, which was delivered April 15. The former vessel was named in honor of the intrepid airman Lieutenant Commander Zachery Lansdowne, U. S. N., who perished when the Navy dirigible Shenandoah was wrecked at Ava, Ohio, on September 3, 1925. The Lansdowne is the ninth ship delivered in 1942 by the Federal Shipbuilding and Dry Dock Company.

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Marin Yard To Be Ready Soon

With the first keel laying scheduled for this summer, the **Marin Shipbuilding Division** of W. A. Becthel Co. at Sausalito, California, is constructing the new plant at record speed. The company officials are simultaneously studying the transportation facilities for getting the workers to this new yard. However, the company will encourage residence in Marin County, where many of the workers will be within walking distance from the plant.

Airship over Shipyard

●

DRAMATIC SHOT of U. S. Navy blimp flying over gantry crane boom in Consolidated Steel's new shipyard at Wilmington.

Ore Carrier Launched

Another major addition was made on April 25 to the ore-carrying fleet of Great Lakes vessels when the steamer Benjamin F. Fairless was launched at the yards of the American Shipbuilding Co. The vessel is one of five under construction for the Pittsburgh Steamship Co., U. S. Steel subsidiary; all identical, the ships are the largest ever built on the Great Lakes.

Due to illness, Mrs. Benjamin F. Fairless, wife of the man after whom the unit was named, was unable to be present at the launching of Benjamin F. Fairless and the vessel was christened by Mrs. Harry A. Lash of Massillon, Ohio, sister of Mr. Fairless, who is president of the United States Steel Corporation.

The following tabulation contains the principal characteristics of the Fairless:

Length overall	639′6″
Length to centerline of rudder stock	622′9″
Breadth (molded)	67′0″
Depth (molded)	35′0″
Designed maximum draft	24′0″
Displacement (at 24′ draft)	23,960 long tons
Estimated registered gross tonnage	10,450 tons
Number of cargo compartments	3
Cargo hold capacity (self trim)	625,000 cu. ft.
Cargo deadweight (at 24′ draft)	18,600 long tons
Shaft horsepower (normal)	4,000
Shaft horsepower (maximum)	4,400

Federal Equips "Libertys"

The Federal Telegraph Company announces that it has been advised by the United States Maritime Commission that it has been awarded the contract to supply the radio equipment on 381 additional ships of the emergency "Liberty Fleet." Federal Telegraph is a subsidiary of the International Telephone and Telegraph Corporation and received the original order last year to equip the first 312 Liberty ships as a result of producing equipment of a revolutionary design which has met the Commission's radio performance specifications. At the same time, it cut the installation time on the ships to one-fifth and brought additional savings in materials, labor, and in the precious shipboard space for which the Commission is applying every development the marine industry can produce.

A number of these installations have already been made and have set the general type standard for the radio equipment on the other Liberty ships yet to be constructed. The new contract with Federal is for the same installation which is being made on the first 312 vessels.

HAULING BY OXEN . . .

in the busy Ingalls Shipyard at Pascagoula, Miss. These powerful creatures haul heavy timbers with stolid unconcern of the noisy machinery surrounding them.

Seventh Plane Tender Launched at Seattle

The U. S. S. San Pablo, seaplane tender, and the seventh of her type to be launched on Puget Sound, left the ways of the Associated Shipbuilders on Harbor Island at Seattle on March 31. The vessel was christened by **Mrs. J. W. Hall,** wife of the commander of the Keyport Torpedo Station, **Miss Winette DeLaye,** daughter of **Jack DeLaye,** hull foreman at Associated, acting as flower girl. San Pablo, named after an arm of San Francisco Bay, joins the Barnegat, Biscayne, Casco and Mackinac, built at the Puget Sound Navy Yard; Rockaway, built at Associated; and Absecon, built at Lake Washington Shipyards.

Second Seaplane Tender From Lake Washington Yards

The Lake Washington Shipyards, at Houghton, across the lake from Seattle, launched its second seaplane tender on April 15, the U. S. S. Chincoteague. Whistles at the yards blared forth; workmen cheered; and, through prearrangement, a Navy patrol bomber flew over the vessel as it struck the water.

In a few months, Chincoteague will be AVP-24, mothership to a squadron of planes of the type that flew overhead. **Mrs. Gordon Rowe,** wife of a Navy commander, stationed "somewhere in the Pacific," christened the vessel. Chincoteague became the eighth of these tenders to be launched on the Sound.

Another C-3 Type At Tacoma

Work on the Navy transport Nassau, launched April 4 at the yard of the **Seattle-Tacoma Shipbuilding Plant No. 1,** at Tacoma, was nearing completion as this was written. The vessel, a C-3 type freighter, was taken over by the Navy on the ways. **Mrs. G. H. Hasselman,** wife of **Lieut. Comdr. Hasselman,** of the Tongue Point Naval air station, christened the ship.

Navy Launchings In Northwest

The Commercial Iron Works, Portland, Oregon, launched the wooden mine sweeper Annoy on April 6, the third built at the yard. The officials

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GENERAL ENGINEERING
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claimed at the time that the next vessel to go on the ways has been fabricated and is ready to be assembled.

The Astoria Marine Construction Company launched the first of four mine sweepers being constructed at their yard. The keel of this vessel was laid on July 15 and it is expected that she will be delivered in a few weeks.

Navy Launchings in Southern California

The San Pedro yard of the Bethlehem Steel Company launched destroyer U. S. S. Kendrick the first part of April, first major war vessel constructed in Los Angeles Harbor since World War I. The 1800-ton destroyer was named for Acting Master Charles Kendrick, U. S. N., who distinguished himself in the battle of Fort Henry, 1862.

The San Diego Marine Construction Company launched the mine sweeper YMS 115 early in April. The vessel was sponsored by Miss Dorothy Anderson, whose grandfather William Horn has been a carpenter of the firm for more than twenty-five years.

Navy Launchings on San Francisco Bay

Western Pipe & Steel Co. launched the U. S. S. Croatan on April 4 at their South San Francisco yards. The vessel, named for a North Carolina sound, was sponsored by Mrs. Powers Symington, the former concert singer who appeared under the name of Maude Fay, and wife of Captain Powers Symington, U. S. N.

The Bethlehem San Francisco Yard launched the destroyer Ganesvoort on April 11. It was named for the late Commander Guert Ganesvoort, who, in command of the Decatur repulsed an attack by savages on Puget Sound in 1856.

The General Engineering and Dry Dock Company of Alameda, California, launched the 220-foot mine sweeper U. S. S. Starling also on April 11.

Navy Launchings On East Coast

The New York Shipbuilding Corporation launched the cruiser U. S. S. Denver, the fourth of its class built in this yard, on April 4. The cruiser was sponsored by Miss Lois Jane Stapleton, 16-year-old daughter of Mayor Ben F. Stapleton of Denver, Colorado.

The Electric Boat Company of Groton, Conn., launched the submarine Blackfish on April 18, the second in sixteen days to be launched at this yard.

Norfolk Navy Yard at Norfolk, Virginia, set a new construction record of 60 days from keel laying to launching when they launched the destroyer Shubrick on April 18.

Mine Sweeper Launched At Bellingham

Built for the British Navy under the lend-lease ship pool, the wooden hull mine sweeper J-817 was launched April

MRS. ENDERS M. VOORHEES, wife of Enders M. Voorhees, a director of U. S. Steel Corporation, sponsored the Great Lakes ore carrier Enders M. Voorhees on April 11 for the Pittsburgh Steamship Company, U. S. Steel subsidiary, at the River Rouge yards of the Great Lakes Engineering Works.

15 from the ways of the Bellingham Marine Railway and Shipbuilding Co. This was Bellingham's first ship launching of the war and the first from the city's newest shipyard, which has contracts for many wooden vessels from the Navy. Christened by **Miss Gwendolyne Talbot,** daughter of **R. S. Talbot, Jr.,** manager of the yard, the vessel flew the British flag as she swept down the ways. Three sister ships, also building for the British Navy, were nearing completion in the shipbuilding shed where the J-817 was constructed. The speakers included **Mayor Arthur Howard** of Bellingham, **Dr. O. E. Beebe,** chairman of the Port Commission; **A. W. Talbot,** president of the shipyard; and **Capt. W. J. Malone,** supervisor of shipbuilding in the 13th Naval District. The J-817 was designed and her construction supervised by **H. C. Hanson,** Seattle naval architect.

Third Destroyer Launched at Seattle

Seattle had its first night launching of the present war program on April 5, when the U. S. S. Endicott, a big destroyer under construction at the Seattle plant of the Seattle-Tacoma Shipbuilding Corporation, followed its two predecessors, the Carnick, March 8, and the Doyle, March 17. The sleek fighting craft slid off the ways without mishap as **Miss Bettie Rankin** smashed a bottle of champagne on her bow under the flood lights that were made necessary by a 10 p.m. launching. The vessel bears the proud name of a heroic Navy quarter gunner who took part in the exploits of Stephen Decatur in the harbor of Tripoli 138 years ago. Miss Rankin is the daughter of **Capt. J. W. Rankin,** commanding officer of the Puget Sound Naval Ammunition Depot.

New Canadian Yard Planned

According to an announcement in April of Mayor Fred Hume, New Westminster, B. C., an American shipbuilding firm has been seeking permission to set up a yard on the Fraser River to build ships of the 10,000-ton class. The firm's name was not revealed.

Canadian Yard Launches Freighter

With her mast, deck and most of the cabins completed, the Fort Good Hope was launched recently in a West Coast Canadian shipyard with a minimum of ceremony. She is a 10,100-ton freighter built on order of Wartime Merchant Shipbuilding Limited.

Fulton Gets "E" Pennant

Taking honors as the second shipyard in the San Francisco Bay area to be so awarded, the Fulton yard of Antioch has been awarded the coveted Navy "E" in recognition of outstanding performance in fulfilling Navy contracts covering small boat construction.

Plans are now being completed for a ceremony to be held at the Fulton plant at which time the award will formally be made by Navy Department officials.

The award takes the form of a burgee or pennant carrying the Navy anchor and Navy "E" which the firm will be permitted to fly for six months. In addition, each employee will receive a specially designed lapel button carrying the Navy seal, a ship, the Navy "E" and the legend "for production."

New Yard To Build Wooden Vessels

Columbia Shipbuilding Company, to be built at Columbia City near St. Helens, Oregon, has been formed by a group of Portland business men to build wooden vessels. The officers of the company are John C. Noble, president; John C. Webb, vice president; A. T. Sulmonetti, secretary; and Jose Sorodka, treasurer.

"BYT" (BRITISH YARD TUG), one of the two first American-built towboats to be delivered under terms of the Lend-Lease Act. It is powered with General Motors diesel-electric drive.

Visual Training
FOR SHIPYARD WORKERS

To SPEED THE training of the army of novices required in the nation's mushrooming shipyards, the U. S. Office of Education has just released a series of ten sound films on shipbuilding. These films, which are being made available to schools and training centers through Castle Films, Inc., are the latest of a series of fifty training films produced under Government auspices and with the cooperation of private commercial organizations, to facilitate the training of war workers.

Covering in detail shipbuilding skills from the preparing of the keel block to the fitting of deck plates, the films have been planned to assist experienced ship artisans in training inexperienced workers in new and constantly changing environments.

According to A. F. Johnson, Coordinator of Shipbuilding, U. S. Maritime Commission, the films should be invaluable in helping this country achieve its goal of 8,000,000 tons of shipping this year and 10,000,000 tons in 1943. Pointing out that five years ago there was very little shipbuilding in this country, Mr. Johnson stated:

"To show learners how the structure and equipment of a vessel are produced and assembled, without interference of related trades and in proper sequence, would be impracticable on the vessel itself. These learners would get in the way of productive workers. The proper kind of motion pictures with essential tasks enacted by skilled men and presented in proper sequence, with supplementary animation and commentary, can be used repeatedly and most quickly to instruct beginners away from the job and with least delay in production.

"They rapidly convey the knowledge of assembly steps, nomenclature, part identification, markings, and supplementary erection procedures, with equal clearness to all learners and with the same opportunities for comprehension.

"They also show skilled manipulation which young apprentices may imitate to their advantage. No other process of visual training can so vividly portray the complete story of producing and erecting typical ship's parts. Nor is it possible to put the student into so many related shop or field environments with little time loss.

"The pictures serve an introductory, or review, and a corrective purpose. They permit, if necessary, the breaking down of complete shipbuilding trades into their component skills. This emergency may be necessary and justified as the shipbuilding pace accelerates."

The ten subjects covered in the series of shipbuilding films are:

1. Preparing and setting a keel block and bottom cradle.
2. Inner bottom section:
   subassembly of a closed floor.
   subassembly of a solid floor.
3. Inner bottom section: setting up and fitting floor.
4. Deck girder: subassembly.
5. Side frames: subassembly of a web frame.
6. Girders: setting a transverse web frame and a horn girder.
7. Bulkhead: laying off the boundary and stiffeners on a transverse watertight bulkhead.
8. Bulkhead: laying off and fitting a centerline stiffener.
9. Bulkhead: setting a transverse watertight bulkhead into hull.
10. Deck plates: regulating and setting.

The film program of the U. S. Office of Education has been planned to fit the specific needs of the war industries program, and has the endorsement of both industry and labor. It is designed to train for specialized skills, and does not attempt to turn an unskilled worker into a full-fledged machinist in short order.

In order to get the films reproduced and circulated at the lowest possible cost, a contract was awarded to Castle Films, Inc. This company is selling the sound-on-film reels at less than nine dollars a reel.

MARINE INSURANCE NOTES

Growing threat of Japanese land, sea and air forces in Burma and the Bay of Bengal and continued menace of Axis submarines in Western Hemisphere waters are reflected in the WSA May war-risk insurance schedule of rates on hull, crew life and wages, issued April 26.

The schedule quotes risks for voyages to the west coast of India, "not south of Bombay" only. The April schedule quoted rates for voyages to the southern tip of India, Cape Comorin.

This would indicate fear of Japanese raiders, working far west of the Andaman Islands and south of India.

Hull insurance rates for this voyage are up to $10 per $100 of hull value against approximately $7.50 in April. Crew life rates are up to $5, against $3.75 for April; and wages insurance rates up to $6, compared with $4 in April.

War-risk rates from the U. S. Atlantic to the west coast of South America are up to $6 for hulls, compared with $4.50 in April, with comparable increases for crew life and wages.

Pacific coastwise rates between Vancouver and Balboa are $1 in May, compared with 50 cents in April, and with comparable increases for life and wages.

WSA war-risk rates on hull, to the east and south coast of Africa not beyond Beira are increased to $7.50 from $6 in April for hulls, with similar comparative increases for crew lives and wages.

Blimp Use Valuable

Shipmasters say that the value of the blimps working out of Moffett Field, Sunnyvale, since April 16, have already proved so valuable that shipping officials and captains hope their number will be increased to patrol the waters from Alaska to the Panama Canal.

MARINE DEPARTMENT
AETNA INSURANCE CO.
QUEEN INSURANCE CO.
MARITIME INSURANCE CO., LTD.
FIDELITY PHENIX FIRE INS. CO.
Commercial Hull Dept.
AUTOMOBILE INS. CO.

MATHEWS & LIVINGSTON
Marine Underwriters
200 BUSH STREET · · · · SAN FRANCISCO
Offices at: Colman Bldg., Seattle · 111 West 7th St., Los Angeles

The blimp works in close cooperation with the surface convoy. Its task is to skirt the flanks in advance and, in pattern with a destroyer, give the fullest possible protection through the more dangerous areas of the entrance to the harbor.

The blimp's vital mission is scouting for mines and lurking subs. Its crew are all crack shots with machine guns and can put mines out of commission with a single salvo.

The blimp works out of the Golden Gate in a big circle and a criss-cross, all hands on sharp lookout for foes.

U-Boat Losses

Losses from January 1 to April 15, through the Axis U-boat campaign against United States shipping has cost marine insurance underwriters a total of $17,000,000, it was reported.

Claims for sunken and damaged ships amounted to $48,000,000 since January 1, against $36,000,000 in total net premiums. Cargo claims amounted to $25,000,000 against $20,000,000 received in net premiums.

It was pointed out that many ships' losses were not reported when these figures were issued, so that losses to the underwriters will exceed the seventeen million dollar figure.

The announcement said that in the past 22 years, U. S. marine insurance companies accumulated around $20,000,000 profits in marine insurance business. All this was wiped out this year by the Axis undersea war.

New Manager For Commercial

Ray B. Johnson has been named manager of the Marine Department of the Commercial Union Assurance Company, Ltd., San Francisco, succeeding **T. William Harwood,** who has joined the armed forces.

Johnson has been connected with the insurance business in San Francisco for the past 12 years, becoming associated with the Commercial Union Assurance Company's marine Department March 15.

STEADY AS YOU GO

(Continued from page 80)

nal must be answered by a similar signal by any approaching vessel, as required by Article 18, Rule 5.

When the vessels *come in sight of each other,* then the proper passing signals must be given and answered in accordance with the provisions of Article 18, Rule 9. The ambiguous phraseology of Article 18, Rule 5, leads many navigators to believe that the passing signals must be given in this situation immediately after hearing the long blast of the other steamer, and before she comes in sight around the bend; the interpretation of Article 18, Rule 5, must be understood in the light of Article 18, Rule 9, which only permits passing signals to be given when vessels are in sight of each other. Incidentally, this warning signal or bend signal is the only signal described in the rules as a long blast. It is also used as a warning signal by vessels when leaving a dock or slip. Its use is confined to inland waters of the United States. It is not authorized in the International Rules.

QUESTION

What rule applies when more than two vessels are involved in a situation?

ANSWER

When more than two vessels are involved in a situation where it is impossible to obey the usual rules, then they are governed by the Rule of Special Circumstances, Article 27.

It often happens that three or more vessels may be meeting or crossing in such a way that a vessel that is privileged to the vessel on her port bow is also burdened to another vessel on her starboard bow. In such a case, a timely and judicious use of whistle signals will usually solve the problem. However, great care must be taken to avoid collision resulting from the acceptance by one vessel of the signal intended for another. When special circumstances exist, each vessel must reduce her speed and take all necessary steps to avoid collision. Should the vessels be in such a position and distance apart that they will meet and pass in groups of two, then the regular steering and sailing rules apply, and Article 27 will not govern.

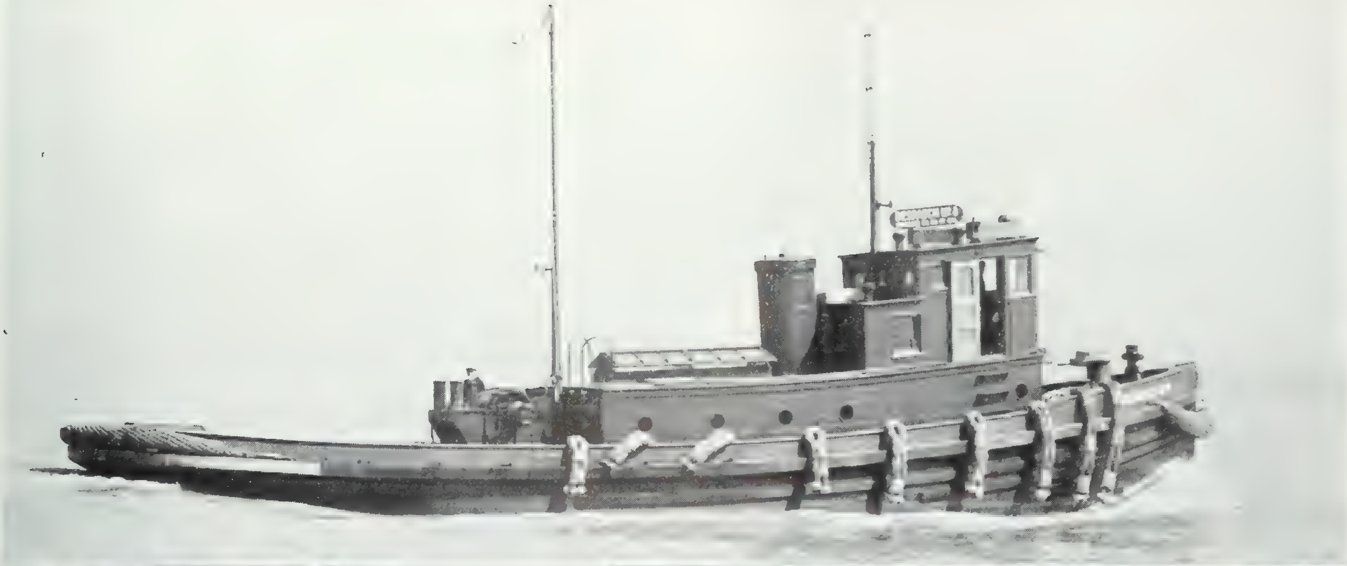
QUESTION

What article or rule governs a vessel while she is backing out of a slip?

ANSWER

The only mention of a vessel moving from a dock or slip is found in Article 18, Rule 5 of the Inland Rules. The vessel leaving her dock shall sound one long blast as a warning to other vessels that may be approaching. Should she, while actually going astern, sight another vessel, she shall sound three blasts on the whistle. While maneuvering to turn around and get on her course, she is governed by the Rule of Special Circumstances, Article 27. After turning and getting on her course, the regular steering and sailing rules apply. The practice of seamen to regard the stern of a backing vessel as the bow has very little, if any, judicial sanction.

This series will be concluded next month with a clarification of the overtaking and crossing situations.



Lovely Sponsor!

RECENT PRODUCT of the Fulton Shipyard at Antioch was the Standard Oil of California's latest towboat DESPATCH No. 8. Sponsor was MISS JEANIE McEACHERN, daughter of Jos. H. McEachern, manager of the Marine Department of Standard of California. The dainty miss set a new record in champagne smashing as our photo so well illustrates! The DESPATCH No. 8, 70' in length overall, 8'7" molded depth, and draws 8'9", is powered with a 400-hp Atlas diesel. Delivered March 13 she is being used to tow the company's barges on San Francisco Bay and tributaries.

The Fulton Shipyard was recently awarded the Navy "E" honors.

MEN AT WORK

1 **SHIP EVAPORATOR.** *If a replacement part is unavailable during ship overhaul, does work stop? Not the Maintenance Department. Here, boilermaker Fred Wales, helper Mickey Fisher and welder A. Myers construct new evaporator for freighter.*

2 **ROPE LADDERS.** *Head Rigger Tom Fallan and Bill Dougherty of sailors standby gang construct rope pilot ladder—ordinarily 30 feet long, these are 45 feet to assure reaching life raft in case ship should list during an emergency.*

3 **SHIP'S MEAT.** *To supply the requirements of our vessels for meat, thousands of pounds of meat a day are cut. Butcher Mike Plendl of the Meat Dept., expertly handles the circular electric saw used in cutting beef round for corned beef.*

4 **FREIGHT ACCOUNTING.** *To Harry Weber, chief freight accountant, falls the job of seeing that all collections are made in connection with freight charges covering cargoes carried on our vessels.*

5 **NIGHT DUTY.** *Night Deck Relieving Officer Edward Brewer performs one of the necessary jobs that are required during a ship's stay in port, which requires routine inspection of cargo holds, crew quarters, ship's lines and watching cargo loading.*

6 **CHECKING IN.** *Timekeeper George Martin of the Paint and Rigging Shop, Pier 32, checks time cards of the scores of scalers of standby gang needed upon the arrival of convoys.*

7 **WIKIWIKI POWER.** *Capt. Rolf Sollie making adjustment and oiling powerful engine of power boat* WIKIWIKI. *Always a welcome sight to Matson ship personnel, for upon their arrival in San Francisco, it delivers their mail to them while still in the stream.*

8 **EMERGENCY RATIONS** *for freighter lifeboats are stored in these containers known as Bread Breakers. Measuring 15" wide, 15" deep x 24" long, with a 5" disc screwed brass cap and rubber gasket, these watertight breakers assure dry rations. Vincent Givliani, sheet-metal worker, completes soldering job.*

9 **GENERATORS.** *Electrician George Lindberg of the electric shop. Big or small repairs. One time it's electric elements on heating units, fixing crew fans or generators, such as this on which he is undercutting mica on commutator of armature of turbine generator.*

10 **KEYSEATER.** *Machinist Al Lind with recently installed Keyseater used in cutting keyways in shafts, for inserting pins, which secure parts to rotating shafts. To handle propeller hubs and weights to 12 tons required a special concrete base 6 feet deep.*

11 **MEASUREMENTS.** *John Wassell, draftsman of the Maintenance Department, taking measurement of eccentric sheave from freighter's main engine for a drawing, from which a pattern is made for the casting of a new sheave.*

12 **HOT METAL.** *Blacksmith Sam Lister, an artist in his work, controls this huge hammer with a hitting force of 30 tons, by signals to his helper such as a lifted eyebrow or the nod or shake of the head.*

Don't talk to anyone about what you're doing, or what you see

Illustrations, Courtesy MATSON NAVIGATION COMPANY

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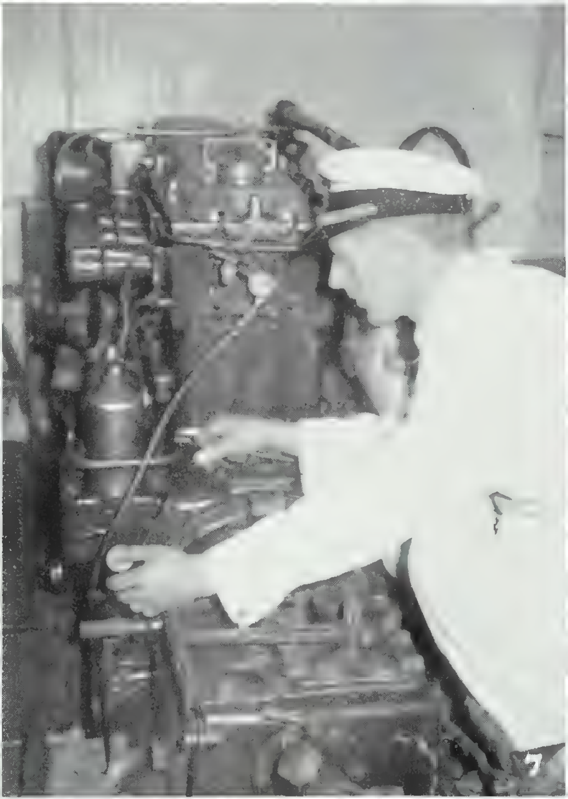

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12

AT THE APRIL MEETING of San Francisco's Propeller Club these four sat at the "Captain's Table": Harry B. Pittman, Purser J. B. Conway, Henry Blackstone and guest-speaker J. Lewis Luckenbach.

J. LEWIS LUCKENBACH

With the "Propellers"

J. Lewis Luckenbach, chairman of the American Bureau of Shipping, "subbing" for Robert C. Lee, Moore-McCormack Line vice president, at a meeting last month of the Propeller Club of the United States, Port of San Francisco, warned his listeners that Japan was building crack ships and turning them out in record time in World War I.

Mr. Luckenbach recalled to his audience that he was stationed in Japan, with his father-in-law, the late John McGregor, for the U. S. Shipping Board, and had an opportunity to observe the skill, indefatigable industry and ability of the Nipponese.

It was not a scare talk, but, as pointed out to the Propeller Club members, there has been, or had been, an idea that the Japanese were a nation of imitators, with no creative ability. This is not true, Mr. Luckenbach said.

He also warned this was no time to be experimenting too much with new ship designs insofar as the merchant tonnage was concerned. He said the prime objective was to build ships, big ships, of fast speed, turn them out in such quantities and quality as to assure no let-up in the furnishing of supplies to our overseas fighting forces, despite the savage assault of the Axis submarines.

Final and complete victory will be ours, concluded Mr. Luckenbach.

SOME of the "old guard" caught by the PMR camera: J. P. McArthur (looking at you), D. N. Lillevand, C. M. LeCount, Fred L. Doelker, S. R. Mudge, H. P. Stewart and W. H. Maybaum.

National Maritime Day

Captain Edward M. Macauley, member of the United States Maritime Commission, will come direct from Washington to speak at the San Francisco observance of National Maritime Day on May 22, at the Commercial Club, Don Fazackerley, chairman of the Junior Chamber of Commerce Maritime Day Committee, announced.

Captain Macauley is the first representative from the West Coast to be appointed to the Maritime Commission, and the Maritime Day observance will be his first appearance as speaker on the Pacific Coast since his appointment. He will be introduced by John O. Cushing, Pacific Coast Director of the War Shipping Administration.

Co-sponsors with the Junior Chamber of Commerce of the celebration are the Propeller Club of the United States, Port of San Francisco, the San Francisco Commercial Club, and the San Francisco Chamber of Commerce.

The San Francisco observance is part of the national celebration proclaimed by President Roosevelt to honor the progress made by the United States in shipping and building of ships. The date commemorates the sailing of the vessel Savannah from Savannah to London, the first transoceanic voyage of a steam-propelled vessel. The crossing was made in 29 days, thus ushering in a new era in the history of marine transportation.

From that time tremendous strides have been made in the building of ships and there has never been a time when the ships and men of the American merchant marine have not played a vital part in the industrial and commercial life of America.

San Francisco's place as a world port is growing even more important since the declaration of war in the Pacific, and National Maritime Day provides fitting occasion to honor the ships and men whose efforts are transporting and supplying America's fighting men in the Pacific.

A display of ship models, shipbuilding procedure and paintings will be held on the floor of the Marine Exchange of the San Francisco Chamber of Commerce, 465 California Street.

JAMES SWETT

James Swett, 2nd Lieut., U. S. Marine Corps Reserve

Another one of the San Francisco "waterfront boys" has joined the colors, and word has been received that James Swett, oldest son of George E. Swett, has successfully passed the work at the Naval Air Training Station at Corpus Christi, Texas, and now is a Naval Aviator with a commission of Second Lieutenant in the Marine Corps.

After spending a short leave with his family he will report to the Marine Officers' Training Base at Quantico, Va., for further instruction and orders.

Some of us remember Jim when he was a little shaver, playing around the Russian River with Bernie DeRochie's sons, and others who are also in the U. S. armed services, and later as a Boy Scout, Sea Scout, C. A. A. pilot, and at this time a Lieutenant in that colorful branch of the service, the U. S. Marines.

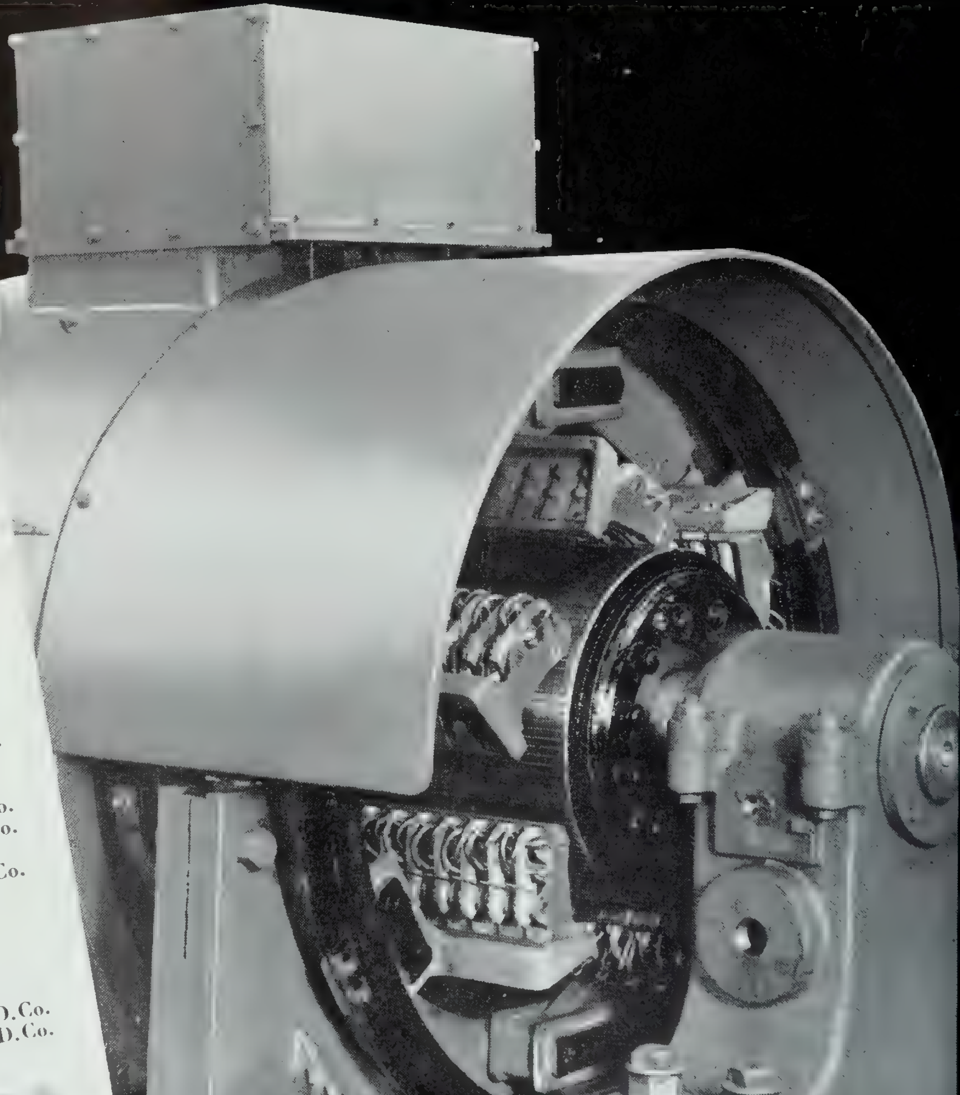
During his summer vacations from college, Jim Swett worked at his dad's place of business, George E. Swett & Co., Engineers, delivering supplies to Naval and merchant ships, and has a large acquaintance with the engineering and deck personnel of many such vessels. His present assignment as a fighter pilot will no doubt take him aloft many times over these same ships and crews who are running the train and delivering material for Victory.

IN COLORFUL CEREMONIES on Saturday, March 28, 1942, Rear Admiral W. C. Watts, U.S.N., representing the Secretary of the Navy, presented the coveted All-Navy "E" pennant to Mr. R. C. Norberg, president of The Electric Storage Battery Company, manufacturers of Exide batteries. This was the first All-Navy "E" award in Philadelphia. Thousands of enthusiastic Exide workers cheered as the blue burgee was raised, while a color-guard stood at attention.

The ceremonies were conducted by John B. Kennedy, radio commentator. In addition to Admiral Watts and Mr. Norberg, there were addresses by Hon. James J. Davis, Hon. John E. Sheridan, Charles Goff, president, Battery Workers' Union, and Lieutenant-Commander Trautman, U.S.N.

Why, Where, How

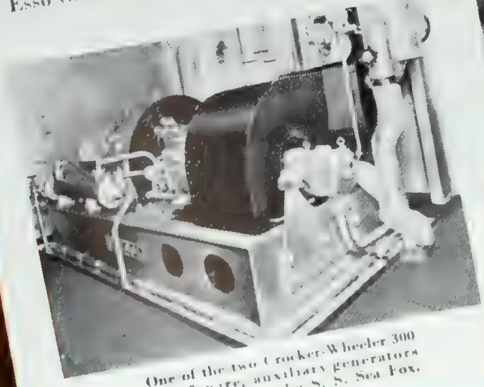
DIRECT-CURRENT,



DISTINCTIVE SHIPS

The following "Distinctive Ships" for 1940 and 1941, as reported by MARINE ENGINEERING AND SHIPPING REVIEW, are equipped with one or more Crocker-Wheeler auxiliary generators:

NAME	BUILDER
CARGO SHIPS	
Sea Fox	Federal S.B. & D.D. Co.
Frederick Lykes	Federal S.B. & D.D. Co.
Doctor Lykes	Federal S.B. & D.D. Co.
Almeria Lykes	Federal S.B. & D.D. Co.
Howell Lykes	Federal S.B. & D.D. Co.
U.S.S. Tangier	Moore Dry Dock Co.
Sea Star	Moore Dry Dock Co.
Hawaiian Merchant	Federal S.B. & D.D. Co.
John Lykes	Federal S.B. & D.D. Co.
Arthur Hoyt Scott	John H. Mathis Co.
Hawaiian Shipper	Federal S.B. & D.D. Co.
TOWBOATS	
Albert E. Heekin	Dravo Corp.
William Penn	Dravo Corp.
TANKERS	
Esso Montpelier	Federal S.B. & D.D. Co.
Esso Concord	Federal S.B. & D.D. Co.



One of the two Crocker-Wheeler 300 kw., 3-wire, auxiliary generators installed aboard the S. S. Sea Fox.

DISTRICT SALES OFFICES

BOSTON, MASS. CINCINNATI, OHIO NEWARK, N. J. PITTSBURGH, PA.
BUFFALO, N. Y. CLEVELAND, OHIO NEW YORK, N. Y. SAN FRANCISCO, CAL.
CHICAGO, ILL. DETROIT, MICH. PHILADELPHIA, PA.
IN CANADA: COMMONWEALTH ELECTRIC CORPORATION, LIMITED, WELLAND, ONTARIO

YOU can obtain

MARINE, AUXILIARY GENERATORS

CROCKER-WHEELER
TRADE MARK
REG. U.S. PAT. OFF.

CROCKER-WHEELER PRODUCTS FOR SHIPBOARD USE

AUXILIARY GENERATORS

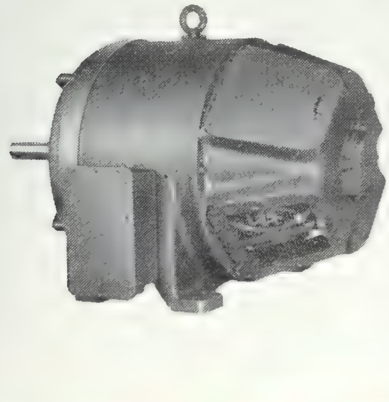
Direct-current auxiliary generators for turbine or engine drive are available in a wide range of sizes. Hundreds of these machines are now being built at Ampere.

AUXILIARY MOTORS

Crocker-Wheeler builds a complete line of direct-current, auxiliary, marine motors (for below deck service) to operate capstans, pumps, blowers, compressors, deck winches, windlasses, etc. Capacity for building this class of equipment is now being increased substantially.

PROPULSION EQUIPMENT

Direct-current propulsion motors and main generators (to supply power for propulsion motors) are available for Diesel-electric or turbine-electric drive.



THE huge ship construction program scheduled for 1942 and 1943 will tax to the limit the country's capacity for the manufacture of direct-current, marine, auxiliary generators. Literally thousands of machines in sizes up to 400 kw. will be required for cargo ships, transports, naval vessels, tankers, tugs, etc.

Realizing that a "severe generator shortage" would be caused by this program unless something was done immediately, Crocker-Wheeler took steps last year to expand its capacity to an extent undreamed of before the war. Production at the increased rate is scheduled to begin in September and will reach maximum output by the end of 1942, at which time Crocker-Wheeler will have the largest plant in the country devoted to the straight-line production of direct-current, marine, auxiliary generators.

Crocker-Wheeler generators have many unusual features which account for their ready acceptance by the marine industry . . . for example, three-wire machines (used to furnish current for both power and lighting on shipboard) have an additional winding placed on the armature to generate the lower voltage. This construction has four important advantages over the ordinary three-wire generator:

1. **Higher efficiency—because transformers (with their attendant losses) are eliminated.**
2. **Simplicity—there are few parts to get out of order.**
3. **Less complicated wiring—both internal and external.**
4. **Greater compactness—an important consideration where space is limited.**

We are now planning our production schedule. May we allocate some part of our new capacity for your needs? Our engineers will gladly work out details of specific applications with you, and make recommendations for reducing "in process" time.

Why not write us today? A list of Crocker-Wheeler offices is given on the opposite page.

CROCKER-WHEELER

CROCKER-WHEELER ELECTRIC MANUFACTURING COMPANY · AMPERE, N. J.

W. EDGAR MARTIN, who heads up the Westinghouse Marine division in San Francisco, returned during April from East Pittsburgh headquarters. At South Philadelphia he inspected the company's huge new 1400-foot Merchant Marine shops. In New York he was royally received by old-time Maritime buddies.

ENTERPRISE ENGINE & FOUNDRY CO. of San Francisco announce the appointment, effective May 1, 1942, of Mr. Roy A. Hundley as chief engineer.

Mr. Hundley, a graduate of Mechanical Engineering from Stanford University, has been associated with Enterprise for the past seven years, during which time he has been associated closely with the development of this company's modern line of four-cycle marine and stationary engines. In recent years he has devoted his time primarily to the development and refinement of supercharged and lightweight, high output engines for the company.

ROY A. HUNDLEY

Edw. F. Dolan Joins Lights, Incorporated

Edward F. Dolan, formerly vice president of Newbery Electric Corporation, Los Angeles, is now associated with Lights, Incorporated, of Alhambra, California. This latter firm are manufacturers of marine and aircraft fittings. Thayer Thorndyke is president of "Lights," and Harry Kimball is managing director.

Band Concerts At Todd Yards

What is believed to be the first program of its kind in the East was opened at noon April 6 at Robins Dry Dock and Repair Company's ship repair yard with a special Army Day flag-raising ceremony that inaugurated a series of band concerts that form part of a program of demonstration of morale among the yard workers, it was announced by John D. Reilly, president of Todd Shipyards Corporation.

The lunch-hour band concerts mark the first step in the Todd corporation's plans for the entertainment of the workers in its various plants.

A special detail of the regular U. S. Army from Governors Island, headquarters of the Second Corps Area, acted as Color Guard during the flag raising ceremony. Joseph Haag, Jr., for the management, and James Brooks, president of the Collective Bargaining Agency for the yard, raised the flag. Jim Hay, Jack Villaire, Bob Pickering and Dan McDonald, veteran Robins employees, acted as flag bearers during the ceremony.

Sergeant Jimmy Cannon, noted sports and newspaper columnist and a star of the radio program "This Is Fort Dix," addressed the shipyard workers and introduced Joe Basile and his band which have been signed for the lunch-hour concerts.

Similar Army Day ceremonies were also to be held at Tietjen and Lang Dry Dock Company, Hoboken subsidiary of the Todd corporation. Band concerts for the workers will also be held during lunch periods at this shipyard.

THE MARINERS CLUB of California held thei
April meeting at the usual San Francisco gathering place and witnessed the projection of two well
edited films, "Defense and the Telephone" an
"Safeguarding Military Information," projecte
through the courtesy of the Pacific Telephone an
Telegraph Co.

President **A. T. HUNTER** was unable to come t
his own party due to last minute orders from Pilo
headquarters. In his absence Secretary N. C
Gunderson officiated with the peppy assistance o
R. H. Glissman, Luncheon Committee chairma

W. C. BRYANT

A COAST-TO COAST COMMUTER by air, W. C. Bryant, Pacific Coast District Manager of the Plymouth Cordage Co., was made a member of United Air Lines' 100,000-Mile Club in April with the presentation of a plaque and certificate sent to him by W. A. Patterson, president of the air line.

Mr. Bryant started his use of commercial air lines in the early "twenties" with the first Boston-New York air line. Although this membership certifies that he has covered 100,000 miles by air, he states that it only recognizes flights on commercial lines, and that just last summer he spent six weeks taxiing by air around Alaska, which is not included in the tally.

According to United Air Lines, there are only a few hundred persons who have traveled enough to be entitled to membership of the club.

NO TIME FOR A BREAKDOWN

Hell's breaking loose in the form of a couple of Junker 87's. They're after a U. S. submarine that's just torpedoed an enemy destroyer, and they mean business.

Below decks, there's no time for anything but a crash dive as fast as the orders can get to the engine room.

When you're giving an enemy bomber the slip, you don't stop to question anything, including the running condition of your engines . . . that's taken for granted.

The above scene is imaginary but the situation is not . . . and there will be many more like it before the war is won.

This much we know—that in order to win it, our equipment must be infallible; *no breakdowns of any kind.*

Oil contaminated with water, abrasives and sludges is a hazard to any engine, and Sharples Diesel and Lubricating Oil Purifiers are specifically constructed to insure against this fatal type of damage.

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Keep Posted!

Recent Development in Ship, Yard and Dock Equipment

Tanker Corrosion Eliminated

The Chemical Research Corporation, after considerable experiment and investigation, developed a protective coating for steel tanks which they named Resistal M-600, and which, in addition to many other notable qualities is insoluable in any petroleum hydrocarbon product.

This product has now been tested for a period of five years on the interiors of tanks used for the storage and treatment of petroleum crudes having high percentages of brine, hydrogen sulfide, and sulphur dioxide content. In these tests, Resistal M-600 gave perfect protection against corrosive action. The protective film itself remained in perfect condition with no embrittlement, and no absorption of moisture.

The following is an excerpt from a report on the use of this material in the cargo compartments of an Atlantic Coast tanker:

"In the case of a tanker application by an East Coast operator, steel plates coated with Resistal M-600 have been in the tanks of this ship since July, 1940. During that time, the ship carried 26 cargoes of gasoline and four of casinghead gasoline.

"On all of the voyages, the ship returned to home port in ballast, and the tanks were steamed three times for gas-freeing during this period. The material tested stood up remarkably well. The film did not appear to have been reduced in thickness and it did not dry out, but remained slightly gummy or rubbery when indented with the finger nail—it was in no way soft. A plate, taken from the bottom of the tank, which came more in contact with brine, showed very considerable corrosion on the unprotected section."

Resistal M-600 has very high dielectric strength and surface resistivity. These two factors make it a practically perfect protection against electrolysis. This material: is flexible, has excellent adhesion to all clean metal surfaces; may be applied with either brush or spray; and sets within an hour after application. Three coats may be applied in three hours and the ship be ready for service after an overnight drying period.

Tankers are now part of our first line of offense and any treatment which will keep them more steadily on the job should be used if possible.

WANTED

GENERAL PURCHASING AGENT

Large established metal manufacturing concern engaged entirely in War work. Young or middle aged; prefer college educated in Engineering. Must be neat, alert, thorough, accurate, good conversationalist direct to point, and not rag-chewer. References of ability and character, experience and salary first letter.

Box 421, Pacific Marine Review
500 Sansome St., San Francisco, Calif.

Bomb Production By "Spinning"

B. F. Harris, President of the National Tube Company, a United States Steel Corporation Subsidiary, announced recently that bomb production by a new "spinning" method has reached the point of efficiency where the process can be utilized at other plants for turning out increasing quantities of this vital American war weapon.

The process is being utilized by the Army Ordnance Department which will have installed similar machines in plants of other manufacturers, and the National Tube Company is lending its aid in educating these potential producers by giving them the benefit of experience gained from nearly twenty months of actual production.

In developing this process, heavy industry has taken a leaf from the book of the ancients, and utilizes, with great modern machines, the methods of the potter and his wheel. A preheated steel tube, turned at a high rate of speed, is fashioned quickly and with surprising precision, into the nose and main body of a bomb by a huge arm which swings into position and molds the revolving tube into the desired shape. Other machines, by the same method, shape the tail portion of the main bomb body.

Bombs of various sizes are made by this method, and after they leave the spinning machines they are normalized, finished, threaded, have carrying lugs welded on, are painted and shipped to loading plants as the first leg on their journey toward action.

About the same time that British soldiers were evacuating Dunkirk, bomb production on a large scale began at this plant after months of research, experimentation, and limited production. In an amazingly short time, men had to be trained to operate these great machines and to work effectively in the important finishing lines. Maximum output from the spinners through to shipment had to be attained and maintained. A tremendous training job had to be accomplished. The result is that today, with an average age of twenty-three, the men of "Bomb Bay" are a smooth-running team, contributing to their country's gigantic war effort—producing for Victory.

Eliminating a Wet Floor Slipping Hazard

. . . *Alundum Tile*

A STRIP of Alundum Tile replaced the original tile down the entire length of this row of ranges. Now the busy chefs have a safe, sure footing even when liquids are spilled—and the non-slip surface of the Alundum Tile will never wear slippery.

Catalog A gives full information about Alundum Tile. Write for a copy—also for Catalog B which describes Alundum Ceramic Mosaic Tile, another Norton Floors product.

* * *

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ALUNDUM TILES—TREADS—AGGREGATES

DROP-TIGHT CLOSURE EASY WITH EDWARD

FOR fast, positive flow control, you can't beat Edward stop valves. Careful, continual design development over the years has resulted in today's dependable, maintenance—minimizing Edward forged and cast steel stop valves.

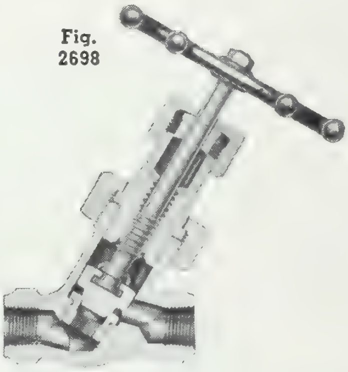
Fig. 2698

Take Edward Fig. 2698, for instance. From the oversize, easy-to-grip handwheel to the forged streamlined, full-area body, there's extra value in every detail. Parts subjected to greatest wear—such as stem, seat and disk — are EValloy, Edward's specially developed tough stainless steel. Exclusive Edward swivel-plug stem-disk construction permits tight seating without misalignment. Globe or angle, inside screw, union bonnet, screwed ends. For 600 lb sp at 750 F in sizes ¼ in. to 2 in. O. S. & Y. also available.

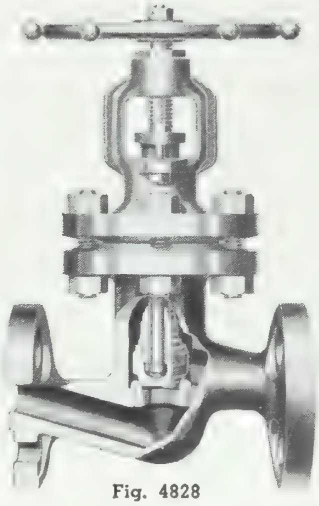
Fig. 4828

Fig. 4828, a flanged end leader in the Edward stop valve line, has the same basic design principles for quick, sure operation and long life. Flanges conform to ASA standards. Globe or angle, bolted bonnet, O. S. & Y., all forged steel. Sizes ½ in. to 2 in.

Other Edward stop valves for 150 to 1500 lb sp, sizes ¼ in. to 12 in. Write for new Marine catalog, No. 201.

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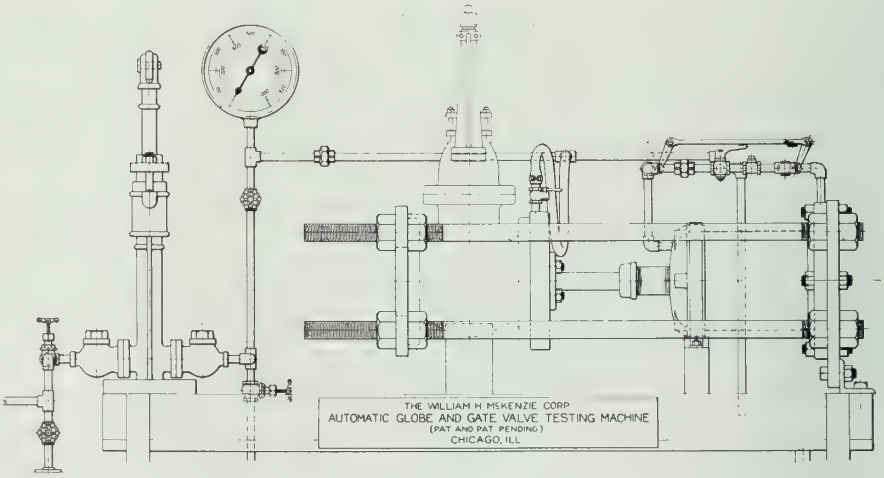
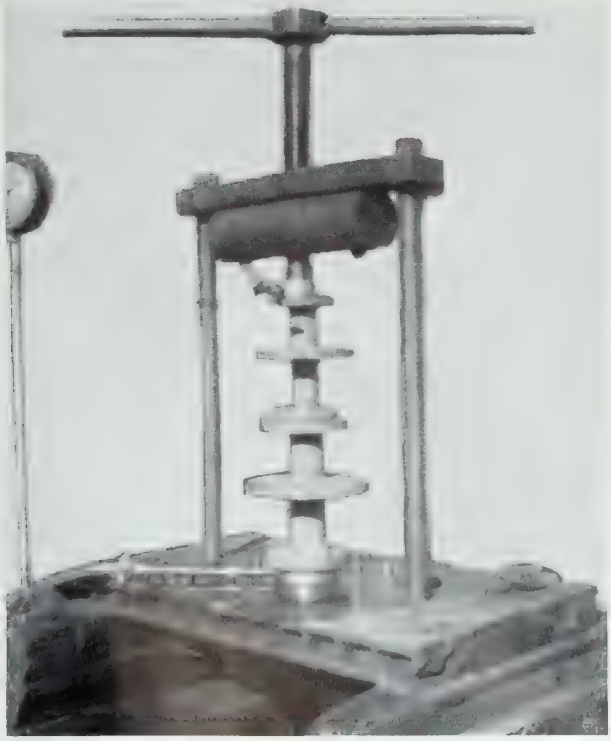

THE WILLIAM H McKENZIE CORP
AUTOMATIC GLOBE AND GATE VALVE TESTING MACHINE
(PAT AND PAT PENDING)
CHICAGO, ILL

DURING WORLD WAR I, when the shipyards of the United States were struggling to produce a "Bridge of Ships" to get American men and munitions across the sea, there was much inventive effort that resulted in many useful time- and labor-saving devices. Among these was a simple effective valve testing apparatus developed by W. H. McKenzie, then working in a Pacific Coast shipyard and now an inspector at a Pacific Coast yard for the U. S. Maritime Commission.

The U. S. Pipe and Bending Company of San Francisco is now manufacturing to order the McKenzie valve testing machine, and will supply these machines to suit individual requirements for any national defense work. The machines are to be sold at cost plus overhead. Plans to suit requirements are available on application to W. H. McKenzie, care U. S. Pipe and Bending Company, 249 First Street, San Francisco.

The pictures show the nature of this device more clearly than a description. It comprises suitable arrangements for quickly developing large hydraulic pressures; securing valves or other fittings in convenient position and having all openings closed pressure tight; a gage to check pressures and a simple effective piping arrangement for applying and removing the hydraulic pressure to the inside of the fitting.

This device saves much time and labor, not only in the matter of shortening the time required for testing, but, due to its ability to test fittings before they are machined, it saves all the machine shop time on imperfect fittings. On large valves this latter item is a very considerable saving.



THIS SIMPLE adaptation of the McKenzie testing machine is being used to test pipe fittings at the U. S. Pipe and Bending Company shop, San Francisco. Thousands of fittings are being tested on this apparatus with record speed.

The War and Phosphorescent "Ghost" Paint

Today's military needs are spurring the development of phosphorescent paint that glows in the dark with a radiance like moonlight, and which might become as common as ordinary household paint when the war is over, according to E. W. Beggs, Westinghouse authority on light sources that activate phosphorescent and fluorescent pigments, speaking before 200 of the American paint industry's executives and chemists at the New York Paint and Varnish Production Club. The quantity production of phosphor-

Page 106, please

VICTORY OVER FRICTIONAL WEAR ASSURED

MATERIALS in the cylinders of Diesel engines are constantly under attack by the combined forces of high cylinder temperatures and frictional wear.

To conquer these forces, you need the superior wear-resisting qualities of HUNT-SPILLER Air Furnace GUN IRON which will assure dependable and economical operation.

Cylinder Liners—Pistons—Packing Rings and Cylinder Heads made from this material will give maximum service between renewals, aid in the reduction of fuel and lubrication costs and help to keep your vessels in service at a time when all are needed.

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Your priority rating—with statement that they're needed for "implements of war"—are all that's necessary for prompt delivery of these and other high-grade FEDERATED Babbitts. Distinction between "implements" and "facilities" of war is a fine one . . . call us if in doubt.

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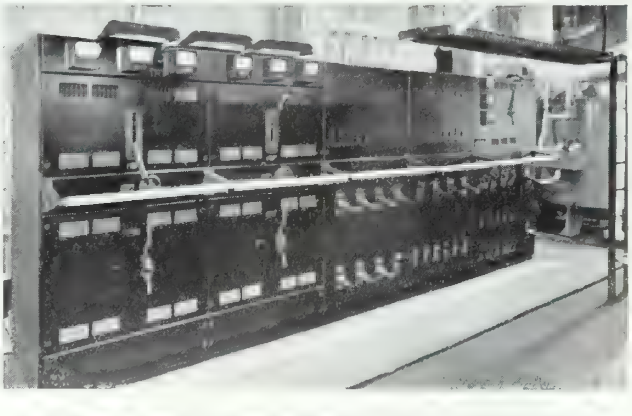

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Naval Architect: Joseph M. Dyer.
Chief Engineer: H. M. Dole.
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Naval Architect: W. C. Allen.
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Plant Superintendent: Myles Rados.
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Naval Architect: George Nickum.
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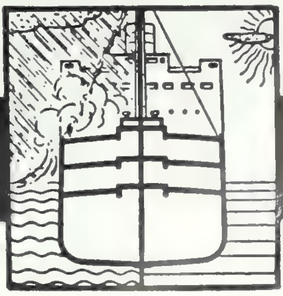

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Purchasing Agent: Henry C. Burger.

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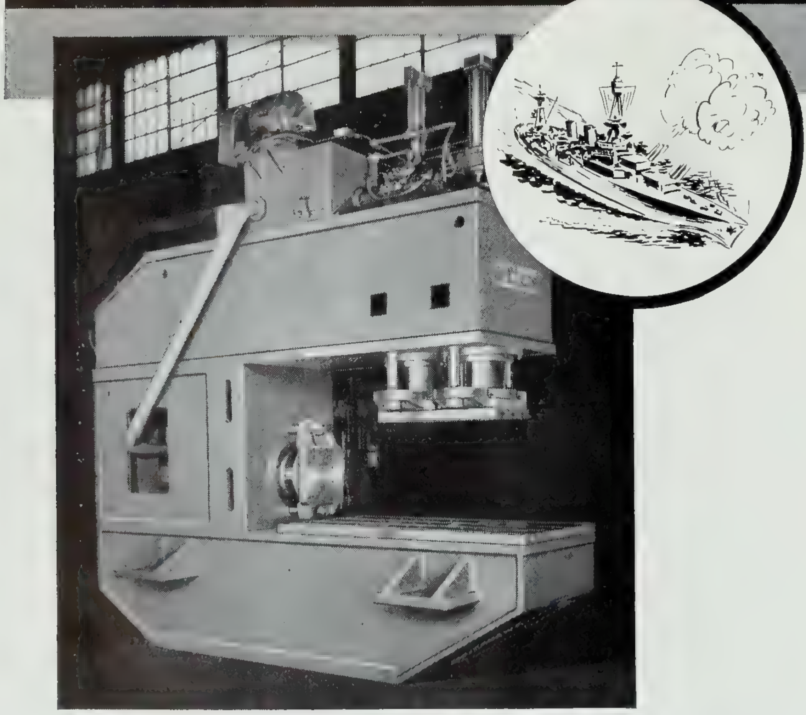

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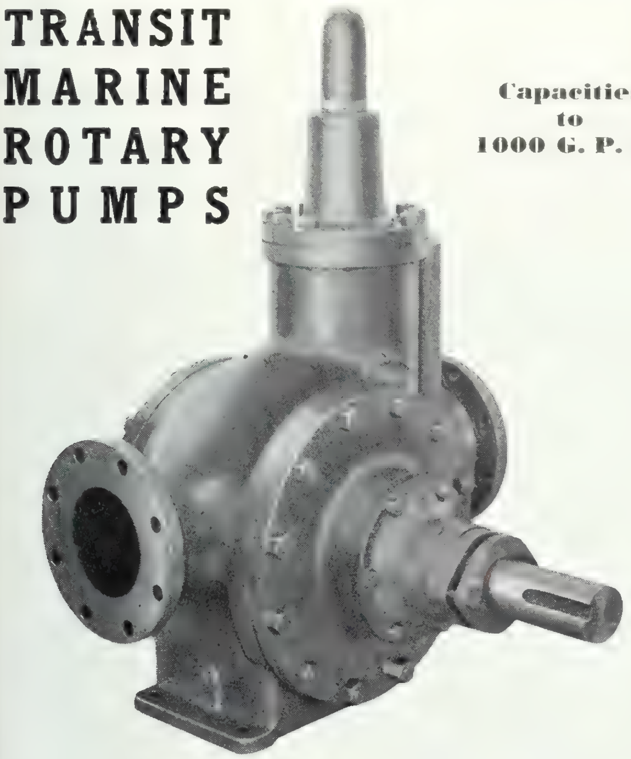

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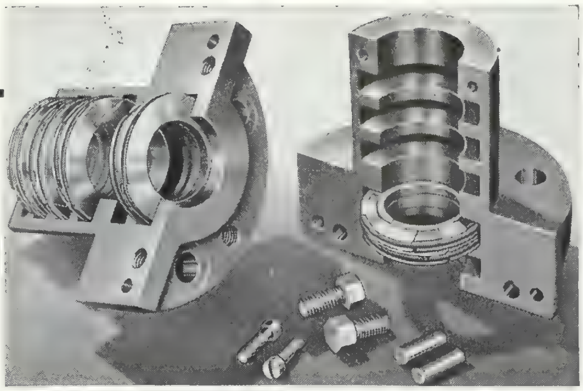

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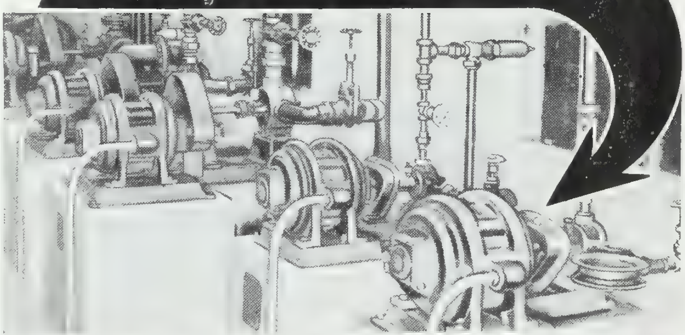

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Phosphorescent Paint

(Continued from page 96)

escent paint would make it available for homes, offices, industrial plants, where walls, floors and objects could be literally coated with light. Use of such paints in the dark holds of ships, in air-raid shelters, or in industrial plants could help save lives in emergencies, since persons could see well enough to get to places of safety.

Phosphorescent paint, Mr. Beggs explained, is composed of mineral substances which act like storage batteries, storing up quantities of light from any artificial source or the sun. In appearance, it resembles ordinary paint. It does not glow, however, except when the lights are turned out. Then it emits enough soft blue or green radiation to enable a person to read a watch.

Westinghouse laboratory research shows that phosphorescent paints on walls give off enough light to enable a person to move safely about a completely closed room. A total of 150 square feet of wall space illuminated to a 20-foot-candle level with standard fluorescent lamps would radiate about seven and a half lumens of light a moment after the lights were extinguished. As paints are improved, they undoubtedly will be made to glow more brightly and to supply radiation for much longer periods and will supplement our regular lighting systems, bridging the gap between darkness and our ever more adequate levels of electric light.

Use of Diesel Engines Shows Great Gains

By W. T. Burgess

With government and industry exerting every effort to meet wartime mobilization needs, the popularity of the diesel engine is increasing by leaps and bounds.

The tremendous gain in adoption of the diesel engine can be appreciated by noting the record established during the past ten years. In 1932, the total horsepower of all diesels sold was approximately 100,000, whereas in 1941 the figure was approximately 4,250,000. With the exception of 1938, each year has shown an increase. In 1933, approximately 400,000 were sold; in 1934, 750,000; in 1935, 1,2[illegible]0,000; in 1936, 1,850,000; in 1937, 2,000,000; in 1938, 1,600,000; in 1939, 2,725,000; and in 1940, 3,375,000 (the figures being for horsepower).

The cause of this enormous swing to diesel transportation is no secret! Today, time is the essence and economy is the watchword.

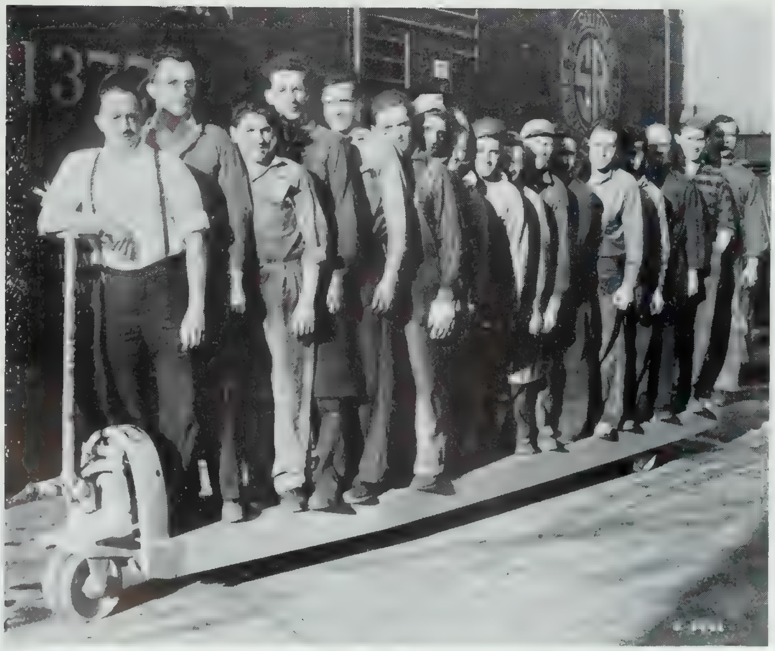
"I believe the diesel locomotive, as well as other diesel-powered machines, are destined for far greater public acceptance during these war years, and the years that will follow the war, than ever before," Mr. T. F. Hudgins, vice president and director of The Cooper-Bessemer Corporation, Mount Vernon, Ohio, declared. "The diesel engine, and its uses are so flexible, and its economies are so worth while, that it is the ideal means of locomotion for either light or heavy loads, or long or short hauls."

Mr. Hudgins, whose company is one of the oldest engine building concerns in the United States, having started business in 1833, further brought out that the diesel's ability to get under way faster is a boon to transportation.

The diesel engine's economical superiority is further attested by the exceedingly small parts replacement or servicing required on those engines put into use since 1923, when the first commercial diesel locomotive was put into service in this country.

In addition to their highly increased favor for railroad usage, diesel engines are becoming more and more popular in the petroleum and gas industries, forestry and wood industries, fishing and marine industries, mining and quarrying industries, central power station usage, municipal utilities, general manufacturing, public buildings and institutions, and in the construction fields.

In the axis nations, the diesel has already come into its own in aviation usage, though this country has yet to exploit its possibilities in this field. From all reliable information available, and from reports of research work now being conducted, it is believed to be only a question of time until the diesel engine will come into wide use in aviation in America, and the other allied nations.



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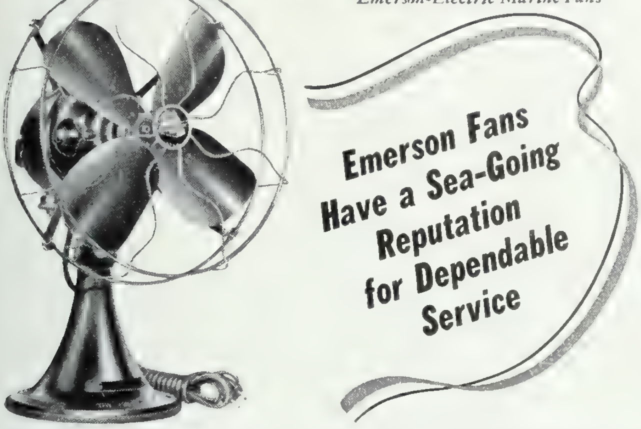
Officers' Quarters—equipped with Emerson-Electric Marine Fans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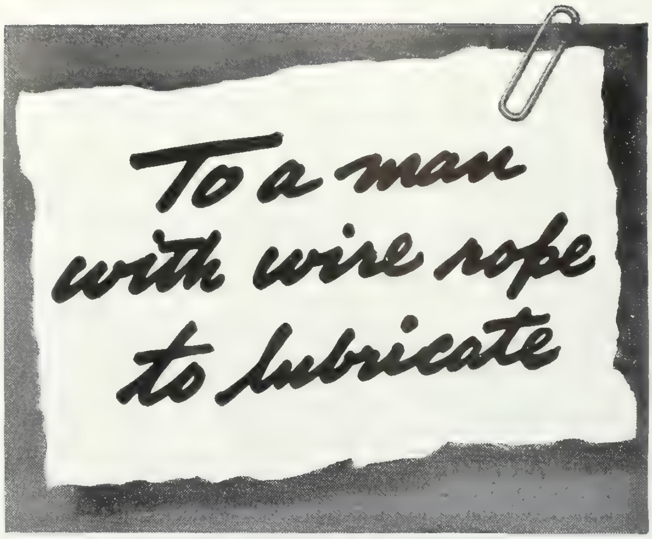

To a man with wire rope to lubricate

Dear Sir:

It's your job to lubricate wire rope. You give a lot of thought and consideration to the lubricant you use. We know that. We also know that when new ways of lubricating wire rope are discovered, you'll want to know about them. That's why we want to give you all the facts about Unacal Cable Lubricant. It works on an entirely new principle.

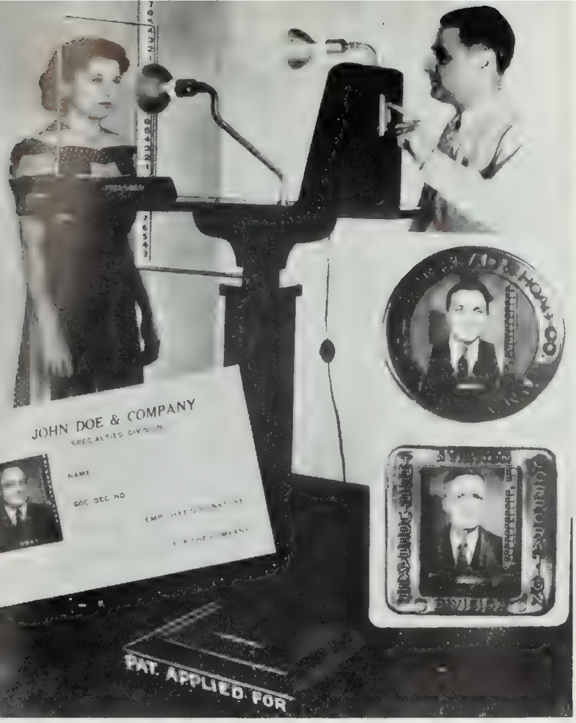
Most wire rope lubricants work from the outside in, and fail to reach the inner strands where wear takes place. But Unacal Cable Lubricant works from the inside out and lubricates all the way through!

The secret is a volatile "carrier" that penetrates to the core of a cable, evaporates, and leaves the lubricating properties where they are needed most...on the inside! Then the lubricant works out around every strand, protecting it from friction, rust and wear. Furthermore, Unacal Cable Lubricant will stay on under extreme high speed or low temperature conditions.

SO PLEASE DO THIS: Ask your Union Oil representative to give you a demonstration. See for yourself how this unique cable lubricant lubricates all the way through. Notice how clean the outside remains. Be sure to call him today!

Yours truly,

UNION OIL COMPANY



IDENT-O-GRAPH IN OPERATION

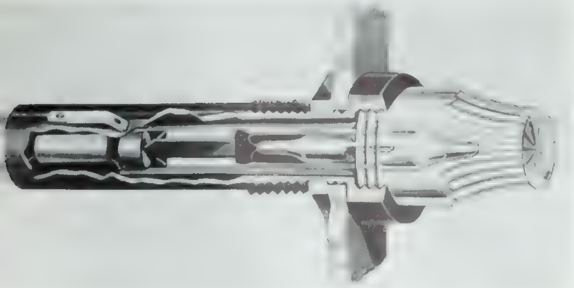
The Ident-o-Graph

These war days are emphasizing the importance, and in many plants, the positive necessity of registering and identifying all employees. The instrument illustrated herewith, and known as the Ident-O-Graph, is manufactured by Photographic Equipment, Inc., of Pittsburgh, Pa. This firm is prepared to furnish with these machines all materials and services which any firm might need to undertake a complete identification system for all of its employees.

The Ident-O-Graph takes an accurate likeness, on which a scale, showing height of the subject in feet and inches, and an identification number also appear. When photographing large numbers of persons, the pictures may be taken at an average rate of 200 per hour.

Littelfuse Indicator Light

This light goes on *only* when the circuit is broken.



This is the time, trouble, and money saving service rendered to remote control by an indicator manufactured by Littelfuse Incorporated. It is listed as Littelfuse Panel Mounting, No. 1414.

The value and dependability of this indicator is evidenced by its wide use in railway signaling equipment and aircraft applications. But it is equally applicable to any circuits, circuit breakers, or line switches.

When installed at any convenient or desirable point in connection with remote motor control, it works instantly, with a plainly visible signal to show "on" or "off." When the circuit breaker opens, the light goes on.

It can be had for 24- or 48-volt filament bulb, with which no resistor is used. Otherwise, it uses a built-in 200,000-ohm protective resistor, in series with a neon lamp. The resistor prevents the lamp from blowing out, as ordinary lamps do, on unexpected high voltages. In the Littelfuse installation the lamp glows on currents as low as 100 microamperes.

The Littelfuse Indicator, or Panel Mounting No. 1414, has a black bakelite body, and transparent molded cap. It is made for panels up to $\frac{5}{16}''$ thick and $\frac{1}{2}''$ diameter mounting hole. Overall length 2″ below panel, $\frac{7}{8}''$ above panel. The rating is 90 to 250 volts. Regularly furnished without lamp.

Synthetic Hard Sponge Rubber

B. F. Goodrich's announcement that its laboratories have completed successful tests and are now ready to go into production of Ameripol hard sponge rubber comes as a real innovation in synthetic rubber manufacturing.

Ameripol, the synthetic rubber that emerged from test tubes in the B. F. Goodrich laboratories, has been proving through one application after another its remarkable adaptability in replacing natural rubber.

Laboratory tests show that Ameripol hard sponge rubber possesses the same properties and general characteristics of the regular Ameripol Compound in its resistance to the action of oils, greases and other solvents that are natural enemies of rubber. It is light in weight—thus giving a high degree of buoyancy; can be sawed or drilled; has good acoustic properties; does not show any degree of injury after prolonged subjection to heat of 158° F. Low water and oil absorption makes it particularly adaptable as a float material. High resistance to acids and oils, broadens its use as a float beyond that of many other materials.

Ameripol hard sponge rubber can be produced in slab or molded form. Compression tests prove that a mechanical pressure of 225 pounds per square inch will not break down or harm in cellular make-up.

New Sequence Timer For Resistance Welding

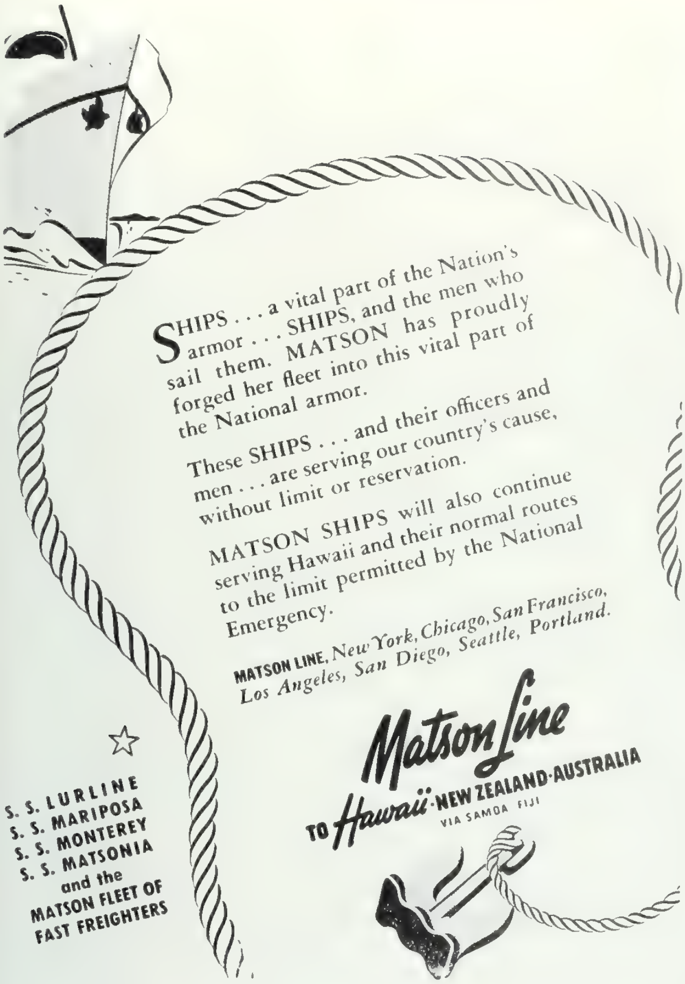
For use in automatic resistance spot, butt, or projection welding, a new weld and sequence timer is announced by Westinghouse Electric & Manufacturing Company.

Housed in a steel wall mounted enclosure of black crinkled finish, the unit is 17¼ inches high, 12 inches wide, and 12 inches deep. Approximate shipping weight is 60 pounds. On a dead front panel, also of steel, are mounted the individual timing circuit, adjusting potentiometer knobs and dials, repeat and non-repeat switches, and the tubes.

The control transformer is wound for 115/230/460/515 volts, 50/60 cycles. The solenoid relay is rated 25 amperes at 110 or 220 volts, and 10 amperes at 440 or 550 volts. Standard foot switch control voltage is 115 volts except when 24-volt circuit operation is specified.

The timing circuit is fully electronic and consists essentially of a resistor capacitor circuit whose charging rate is adjustable by varying a resistor. The voltage of the circuit is applied to the grid of a thyretron tube so that after a predetermining charging time has elapsed the thyratron is energized and operates the relay.

The timer divides the total time of a weld into the various intervals in which the welder goes through its operating sequence and includes a "weld" period of 3 to 30 cycles when the full welding current flows. When welding thick plates, brass, or stainless steel, timing facilities permit intermittent heating and cooling steps of from 3 to 30 cycles.



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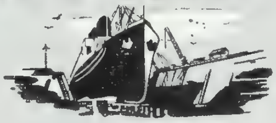

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Reviews of Recent Books

Elements of Strength of Materials, by S. Timoshenko and Gleason H. McCullough, 375 pages, 6″ x 9″, with 365 illustrations and numerous tables; bound in red cloth with gold stampings; published by D. Van Nostrand Co., New York. $3.25 net.

This is a fifth printing of the second edition of this work, which has become a standard textbook in many American colleges and schools of engineering. The book is an outgrowth of Timoshenko's monumental two-volume treatise on strength of materials, and is designed primarily as an undergraduate textbook.

S. Timoshenko is professor of Theoretical and Applied Mechanics at Stanford University, Palo Alto, California; and Gleason H. McCullough is professor of Engineering Mechanics at Worcester Polytechnic Institute, Worcester, Massachusetts.

Both of these men are not only masters of their subject but both possess in a marked degree that rarer ability which enables them to pass that mastery to their pupils. This book therefore becomes very valuable for the students of marine and mechanical engineering, both in and out of colleges.

The application of mathematical analysis to the problems of stress and strain in the materials of engineering becomes simple, clear and understandable as the reader is led through the process by these great masters of that art.

How One Company Tackles the War Production Problem. Printed at the request of the National Association of Manufacturers and presented to the War Production Board.

This is an actual case history of how one American manufacturing concern, faced with the loss of more than half of its business, planned and executed that plan to obtain prime contracts and subcontracts, in order to keep the business going.

The manufacturer involved in this case study was prevailed upon by manufacturing friends to publish this story as a guide which would be helpful to other manufacturers.

The book is a step-by-step treatment of how this company set about to regain lost production—replacing former peacetime products with war products. Most interesting is the completeness of their campaign in going after subcontracts; the job within their own organization to coordinate all divisions of the business to expedite this work.

The fourth and final step in this book, "Coordinated Action," is packed with suggestions for every manufacturer, large or small. It deals particularly with the company's own War Production Board—a committee that meets every day to coordinate all divisions of the business on this one all-important problem of identifying the company with the war picture. The operation of this war committee is outlined in detail.

A copy of this book may be obtained at no charge by writing on your business stationery to Lyon Metal Products, Incorporated, 3244 Clark Street, Aurora, Illinois, and asking for the book "How One Company Tackles the War Production Problem."

Elmer Squee, by Ensign R. L. Brooks, U.S.N. Res.; 100 pages in three-color board covers; published by the McMillan Co., New York. $1.00 net.

This is a delightful book of cartoons creating the naval apprentice seaman Elmer Squee and reciting in picture and rhyme the adventures of that "shy little man" in being "made strong by the sea." The author is treating a subject with which he is very familiar as shown by the following data:

Richard L. Brooks was born in Gloucester, Massachusetts, July 10, 1917. At sixteen, he was a merchant marine cadet on the United Fruit boat San Bruno, traveling from Boston to St. John, N. B., then to Jamaica and Honduras. After attending Tabor Academy, the nautical preparatory school, he went to Dartmouth, graduating in 1939. While there, he was the creator of widely publicized snow statues which won prizes at the Dartmouth Carnivals of 1937 and 1938. In 1939 he built the largest snow sculpture in the world. It consisted of a mass of ice thirty-seven feet high and weighing twenty-five tons, which was modeled into the figure of Eleazer Wheelock, founder of Dartmouth, holding aloft a seidel of rum in salute to the Winter Carnival guests. Ensign Brooks also wrote an article on snow sculpture for the "Dartmouth Book of Winter Sports."

Ensign Brooks has recently been on active duty in the First Naval District in Boston, having trained for his present commission at the U. S. Naval Academy. His training as a midshipman in the reserve took place aboard the U. S. S. Quincy. He has now been transferred from the First Naval District for duty afloat.

A Glossary of Sea Terms, by Gershom Bradford; 230 pages with numerous illustrations; bound in blue cloth with black stampings; published by Dodd, Mead & Company, New York. Price $3.50 net.

This is the second edition of a book first published in 1927, and which has been practically since its first appearance accepted as an American standard text on its subject.

Captain Bradford is a licensed shipmaster of sail and steam, and for some years has been the chief of the section on notice to mariners of the Hydrographic Office of the United States Navy. For the past fifteen years he has been collecting new items for inclusion in this book and had over 400 ready for this second edition. This brings the total to over 5000.

Anyone who is interested in the vernacular of the sea and its shipping, in shipbuilding terms, or in the better appreciation of tales of seamen and their exploits should add this little volume to his shelf of books.

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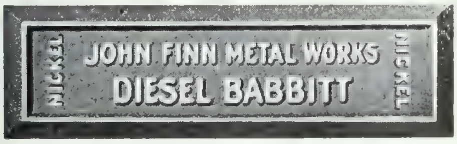

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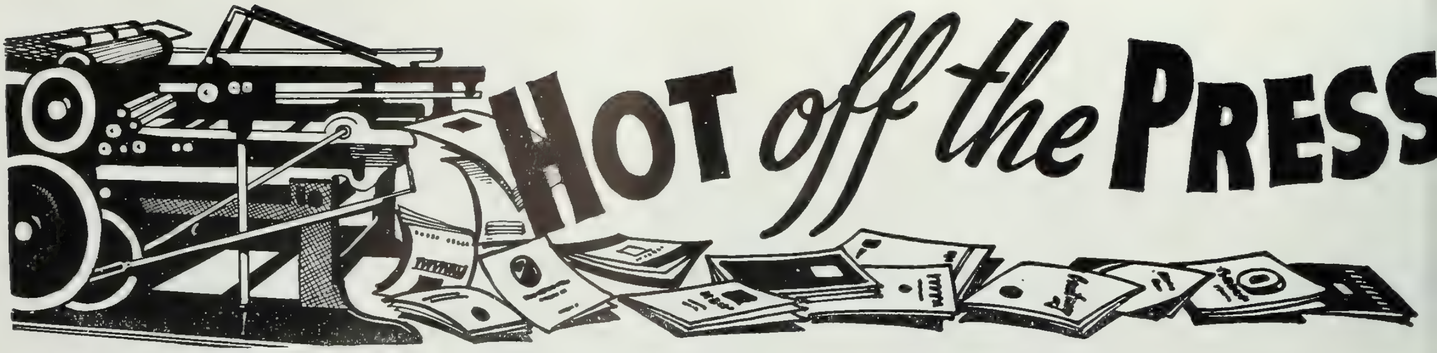

HOT off the PRESS

The Catalogs of Today Become the Technical Handbooks of Tomorrow

How to Safely Stretch Steaming Capacity. A 20-page bulletin (No. 20), prepared by the Bailey Meter Company as an aid to power engineers who are faced with the necessity of meeting sharply increased steam demands and who will be obliged to operate their boiler plants on a 168-hour week schedule.

Numerous fundamental suggestions are made under the general headings of:

1—Check Condition of Boiler and Furnace
2—Check Operating Procedure
3—Check Possibilities for Modernization
4—Base Daily Operation on Accurate Measurements and Records

Many of these suggestions made can be carried out without the use of elaborate metering or control equipment. This bulletin, which is really a check list of procedure for boiler room improvement, also explains how the proper use of metering and control equipment stretches steaming capacity, avoids frequent shut-downs for maintenance, insures safety of men and equipment, furnishes data for comparison of fuels, reduces fuel consumption, and maintains efficiency while new operating crews are being trained.

Farrel-Birmingham 98% in War Production. In the 1941 Annual Report of Farrel-Birmingham Company, Inc., Ansonia, Connecticut, and Buffalo, New York, pictographs point out that 98 per cent of their plant facilities is engaged in war production and show the three-year expansion of the company's output of four lines of equipment important to the national war effort.

The report also contains coin diagrams showing the percentage of the sales dollar absorbed by taxes, replacements, purchases from others, as well as wages, salaries, executive compensation and the residual available for reserve and dividends. One diagram shows the tripling of the tax burden in the last two years, and another that the amount paid in taxes for 1941 was equivalent to the earnings from eight months' use of the company's plant facilities.

Marine Hardware, a new edition of the Reading Hardware Corporation's catalog of marine hardware, has just been printed and is now being distributed to those interested in hardware equipment for ships and boats of all kinds.

This new catalog, in addition to illustrating and describing a complete line of locks, knobs, hinges and miscellaneous fixtures and fittings, contains several unique features such as a comparative list of Navy specification and the company's numbers.

The frontispiece is a full color design featuring the complete International Signal Code. It is a loose-leaf book, attractively bound, and, while it is being issued at a time when new items are rapidly being added to the line, because of the unusual activity in this field in the emergency, the company plans to keep catalog holders up to date by distributing additional pages from time to time.

Ship and boat builders, naval architects, dealers and others interested in the purchase and use of this type of material are invited to write the company for a copy.

Oil Burners Type A and Type H, bulletin No. 108, issued by the Peabody Engineering Corporation, New York. This four-page, illustrated brochure describes in detail the oil burners, air registers, and atomizers designed and built by this pioneer firm in the field of oil burning under marine boilers.

Three Stage Steam Ejectors, bulletin W-205-B9, issued by Worthington Pump & Machinery Corporation, Harrison, N. J., is an eight-page booklet describing and illustrating a complete line of three-stage ejectors, both condensing and non-condensing. These ejectors are applicable in all processes requiring a high vacuum.

Horizontal Dry Vacuum Pumps, bulletin L-710-B1, issued by the Worthington Pump & Machinery Corporation, Harrison, N. J., is an eight-page booklet describing a complete line of single-stage and two-stage vacuum pumps in both steam-drive and belt-drive types, and covering a large range of capacities.

Steam-Flow Characteristics of Extraction Turbines is the title of a leaflet distributed by the De Laval Steam Turbine Co., Trenton, N. J. A diagram shows relations between throttle flow and output for conditions of minimum flow to exhaust, maximum flow to exhaust, maximum throttle flow, and various percentages of extraction.

A New Krembs Chart. The tremendous importance of fluxes has gradually become recognized by men concerned with welding, brazing and soldering metals.

Long ago the theory of "one flux for all purposes" was exploded. Both scientific experiments and practical experience showed that joining one metal presented different chemical and met-

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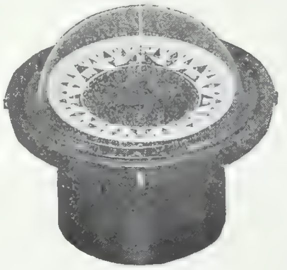

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Naturally, the selection of the particular flux which will produce a perfect bond on the job at hand is most important . . . and frequently difficult. The new Krembs Chart is almost indispensable to anyone doing welding, brazing or soldering. It gives quick answers to over 400 fluxing questions, and at the same time, is practical and easy to use. It is based on 75 years of experience in solving metal joining problems. Metal-working concerns may obtain complimentary copies by writing on their letterheads to Krembs & Company, 669 West Ohio St., Chicago.

1942 Standard Pennflex Data, Bulletin No. 71; an eight-page booklet, published by the Pennsylvania Flexible Metallic Tubing Co. This booklet describes and lists technical data on Pennflex all-metal flexible parts for diesel engine installations.

These pipes are adapted for exhausts, fuel leads, air supply, oil supply, and circulating water lines.

Multiple Pressure Reducing Orifice, a four-page leaflet (W-318-B19) in red and black, published by the Worthington Pump & Machinery Corporation to supply technical data on the performance of their Pressure Reducing Orifice fitting, as used in boiler feed by-pass lines.

Feather Valve Compressors, Bulletin L-675-B, a 30-page booklet in blue and black, published by the Worthington Pump & Machinery Corporation, and describing their horizontal duplex air compressors.

Various installations and applications of these compressors are shown in illustrations and a folded insert shows typical details of the mechanism.

As manufactured, these compressors range from 75 to 3000 hp. The booklet pictures applications in all of the major industries, and illustrates various methods of variable capacity control and of arranging the auxiliaries necessary for most economical operation.

Sequence and Weld Timers—automatic control for resistance welders—are described in a new seven-page leaflet (D.D-18-343-7-N-20) announced by the Westinghouse Electric and Manufacturing Company.

Definitions and general information about sequence and weld timing, pulsation and spot welding are given. Timers are completely described and illustrated. Operating details cover charging rate, "repeat" and "non-repeat" operation and pulsation timing. Circular charts are used to show the timing sequence of squeeze, weld, and hold time in terms of numbers of cycles for both pulsation and spot welding.

Control transformer and relay ratings, control voltage, and timing adjustment range are listed. An outline drawing of the unit shows mounting details and physical dimensions.

Electrical Instruments, for industrial, central station, laboratory, and general use, portable switchboard and miniature panel instruments, are described in a new 34-page booklet (B-3013-7-N-20) announced by Westinghouse Electric and Manufacturing Company.

Somewhat the same in format as the popular and well-known quick-selector catalog, the new publication lists all instrument types for specific applications on an instrument selector chart. Special features, specification data, and full-scale range of standard ratings are included.

Design features and physical characteristics of meter pivots, springs, pointers, and cases are described with a note on manufacturing methods, and testing facilities are also included.

Reproduced in the booklet are 120 photographs, 44 representative meter dials and 13 types of strip and circular charts.

Safety Clothing and Equipment for Marine Use, a 26-page booklet (Catalog No. 41), in three-color covers, describing and illustrating a complete line of safety equipment for use on shipboard as designed and manufactured by the Safety Clothing and Equipment Company of Cleveland, Ohio. Goggles, masks, shields, helmets, splint stretchers, safety belts, rubber clothing, asbestos clothing, safety shoes for ladders, safety treads, non-slip paints, first aid kits, and many other items are herein shown and their uses explained.

Keystone Industrial Brushes, catalog K-15 of Keystone carbon, graphite, and metal-graphite brushes, has just been issued by the Keystone Carbon Co., Inc., Saint Marys, Pa. Popular types of Keystone metal-graphite brushes for low voltage generators and slip ring applications, and carbon-graphite brushes, for motors and generators, are illustrated. Also shown are fractional horsepower and automotive brushes, as well as metal-graphite and carbon contacts, negative temperature coefficient resistors, and Selflube porous bronze and porous iron bearings.

The new catalog contains base prices of standard sizes of brushes and gives a simple method for computing prices for each style. Copies of Catalog K-15 are available free upon request.

The Overboard Life-Saver Suit

The daily sinkings of ocean-going vessels by submarines has focused much attention on life-saving equipment.

Goodall Rubber Company, Inc., has developed in recent years a life-saver suit of great merit for the saving of men's lives and for giving them protection against over exposure.

This suit is called the Overboard. It is made in one piece waterproof fabric and rubber boot feet to fit overshoes and complete clothing. Its wristbands are snugly fitting pure gum, and its hood is constructed to fit closely around the face. If so ordered, gloves may be attached to sleeves. Hoods and gloves are bright yellow for a greater visibility.

A kapok vest to provide suitable buoyancy is encased in waterproof fabric and may be either separate or built in as desired.

The fabric of which Overboard suits are made is heavy enough for ample protection against cold water, and is highly resistant to sun-checking and deterioration in the tropics.

When properly stored, the Overboard suit can be pulled out and put on in less than one minute. Its principal closure is the exclusively designed Shur-Shut front.

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1942

Pacific MARINE REVIEW

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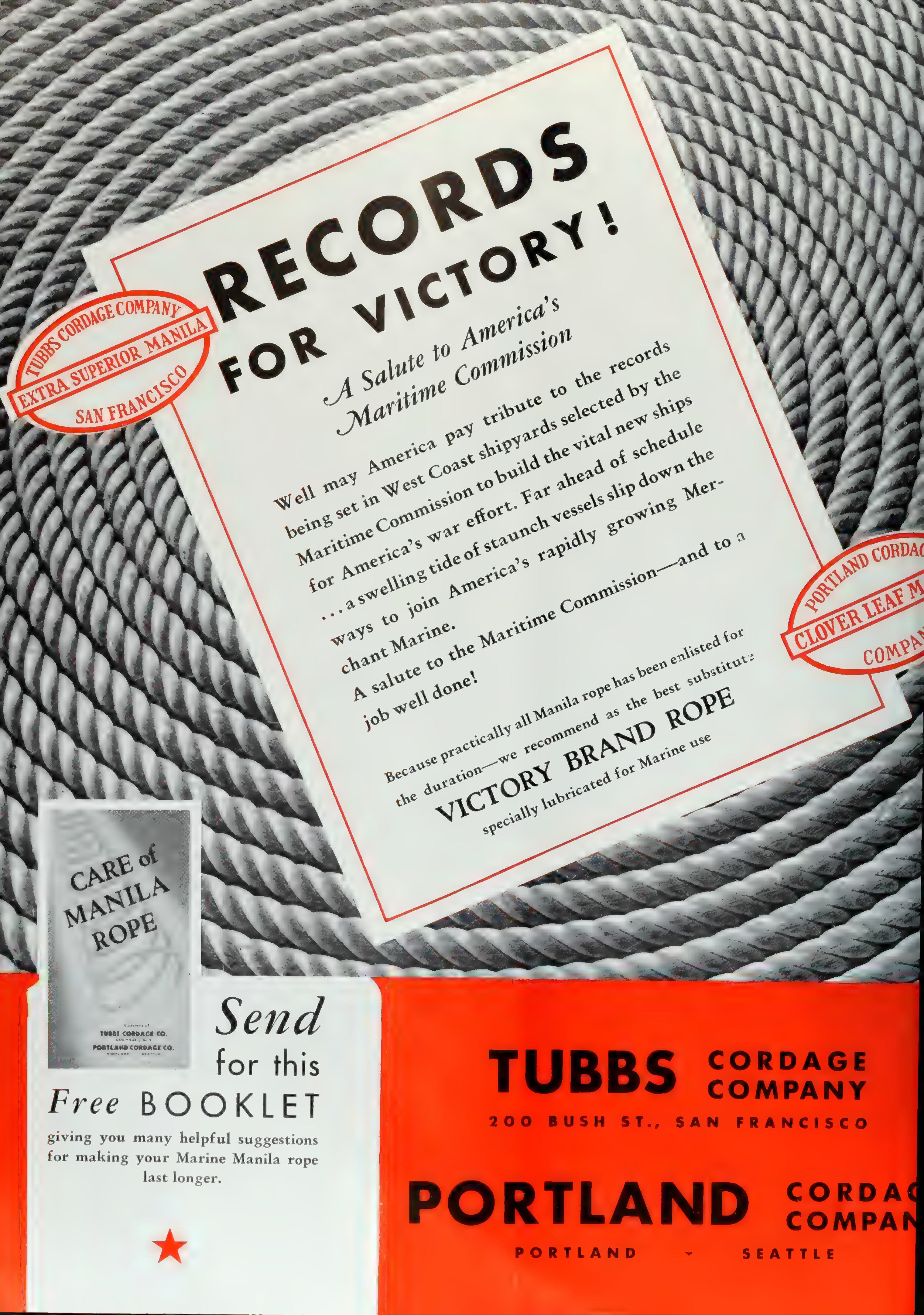

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Pacific MARINE REVIEW

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Pacific American
Steamship Association

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Shipowners Association
of the Pacific Coast

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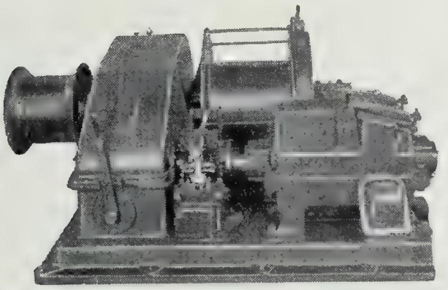

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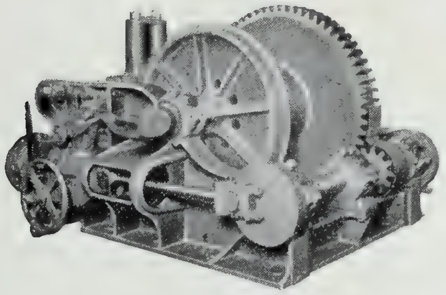

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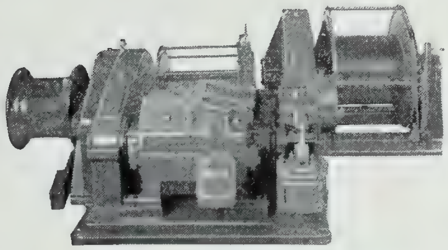

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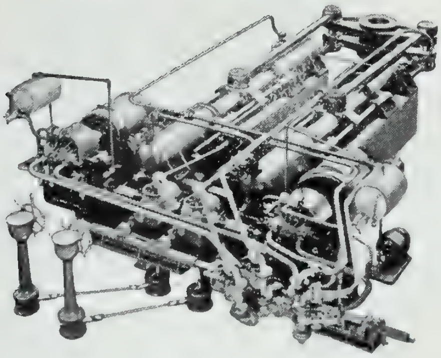

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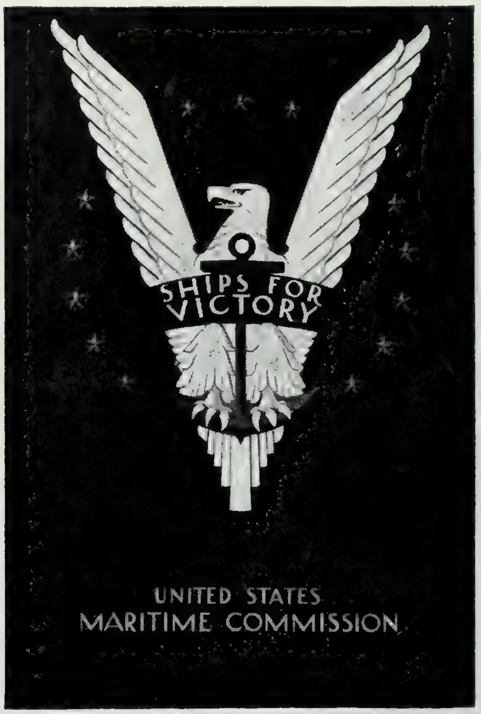

IT TAKES SHIPS TO WIN

In every war our country has waged it has taken ships to win. This time . . . with our frontiers flung across oceans . . . it will take more ships than ever, built at a pace never dreamed before . . . to transport men, munitions, food, medicines and the essentials of life for our fighters on land, sea and air.

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Pacific
MARINE
REVIEW

Editorial Comment

Waterfront Security and Responsibility Therefor

by Rear Admiral C. E. Freeman, U.S.N.

IT APPEARS THAT THERE has been some misunderstanding with regard to the responsibilities and relationships of the Navy and the Coast Guard in the protection of the waterfront. To clarify the subject the Commandant wishes to state that the present organization for waterfront protection has been in effect for some weeks, that it is being steadily improved as additional facilities and personnel permit, and that the responsibility has been definitely fixed.

Under the wartime organization there exists between the Navy and the Coast Guard the same cooperative and intimate relationship traditionally found between the Navy and the Marine Corps. There are differences only in objectives. The Navy's responsibility is to patrol and protect against enemy action. The Marine Corps is a fighting arm of the Naval Service, trained for combat on land, as well as at sea, and is habitually a part of the Navy. The Coast Guard, on the other hand, is a part of the Navy, under existing law, only during war or national emergency. In war, therefore, while continuing its regular peacetime duties, the Coast Guard is charged with the highly important function of protecting facilities and shipping in harbors against hazards of sabotage and negligence, as well as aiding the Navy directly with its personnel and ships.

By a previous order of the Commandant, there has been set up a District Port Organization headed in each principal port by a Captain of the Port. This organization is based upon the authority of the President and the Secretary of the Navy.

The responsibility for waterfront security lies with the Captain of the Port. The principal duties of the Captain of the Port are, in addition to protection of the Port against sabotage and negligence, as follows: to control the anchorage and movement of vessels in the harbor; to issue identification cards to those entitled to carry them; to control the loading and shipment of explosives and other dangerous cargoes; control of traffic in harbors and channels; provision of boarding and examining parties; enforcement of Federal laws on navigable waters within his jurisdiction.

The Captain of the Port is authorized to obtain such cooperation of Federal, State, and City authorities, as he may find necessary.

Souls Swift— Feet Jubilant

WE DELIVER THE GOODS

by Captain Edward Macauley
U. S. Maritime Commission

TEN YEARS AGO TODAY by Presidential Proclamation May 22 was proclaimed National Maritime Day pursuant to a joint resolution of the Congress. May 22 was selected because on that day in 1819 the first ship to make a successful transatlantic voyage under steam propulsion had sailed on her historic voyage. There must have been few indeed at that sailing with the imagination to grasp its portent. There were certainly none in 1933 who could foresee the significance National Maritime Day would have in the spring of 1942, not only for the American people, but literally for the whole world.

Now that world is aflame with war, and, because of the immense extension of our battle lines, the civilian industry this day observes has become the very foundation of our military might. This is a conflict of space—of distances so vast that the imagination cannot grasp them. The battle lines are flung from all the continents—from Asia, Africa and Europe to our home waters. The distances are staggering. The supply lines stretch around the world.

Australia is 10,000 miles away. To Libya and the vital Red Sea area by the long voyage around the southern tip of Africa is a trip of 10,000 miles. Supplies to Russia travel over 4000 miles. And ships must be diverted and have been diverted into those routes essential to the winning of the war. Ships that carried sugar are now hauling munitions; tankers transport aviation gasoline to our fliers in Australia, instead of gas for the casual motorist on the East Coast; manganese ore and nitrates instead of coffee are on the ships arriving from South America.

On Maritime Day, May 22, the great dining room of the Commercial Club of San Francisco was filled to overflowing with an enthusiastic audience who listened with rapt attention as their fellow townsman and representative on the U. S. Maritime Commission, Captain Edward Macauley, delivered this sobering and yet inspiring address. When he had finished, the roomful rose to their feet in a great ovation.

This lunch-meeting was given under the joint auspices of the Senior and Junior Chambers of Commerce of San Francisco; the Propeller Club, Port of San Francisco; and the Commercial Club of San Francisco. It marked the high point in San Francisco's celebration of Maritime Day.

Shipbuilding Growth

In 1937, a year after the establishment of the U. S. Maritime Commission, we ordered 50 ships. The crescendo of the shipways in these intervening years is an accurate gage of the Nation's approaching danger: [illegible] ships in 1937; 100 ships in 1939; [illegible] in 1940; and, by Presidential or[illegible] this was lifted to 400 in 1941.

The Navy, too, was building, [illegible] existing yards were overflowing. [illegible] new yards rose from swamps and du[illegible] heaps. New techniques were es[illegible]lished. The scarcity of ship const[illegible]tors, shipbuilding supervisors, ma[illegible]e engineers, was met by the ingen[illegible] and brilliance of men from other w[illegible] of life, masters of production. [illegible] could never have approached the [illegible] of 2300 ships, which we shall su[illegible] reach, without the able if somew[illegible]t unorthodox assistance of other e[illegible]neering professions than the s[illegible] builders.

When war broke out, the numb[illegible]f ships necessary to the transfer of [illegible]terial rose astronomically. In 1942 we must build over 1000 ships.

Our shipping problem is divided into three distinct parts: construction; operation, including routing and loading; and manning—finding the officers and men to sail the ships. The President, by the authority granted him under the War Powers Act, created the War Shipping Administration and transferred to it the operation and manning of the ships, leaving the construction under the Maritime Commission.

War Shipping Administration

The War Shipping Administration directs the operation of the merchant marine of all the United Nations with the exception of Great Britain. Indeed a system of cooperation has been worked out with Great Britain, too, through Combined Shipping Adjustment Boards, one of which is located in London, and a second in Washington. All ships are allocated to haul such cargoes and travel on such routes as will best contribute to the defeat of the Axis. The War Shipping Administration is concerned with four major tasks:

1. Transportation and maintenance of the American Expeditionary Forces in many scattered and distant sectors of the world;

2. Supplying the United Nations with war materials and Lend-Lease goods;

3. Importation of strategic raw materials in sufficient quantities to keep our war industries operating at full speed and to build up stock piles;

4. Maintenance of our national economy and that of our Good Neighbors in the Western Hemisphere.

It is a man-sized job.

New Tonnage Problem

The construction of new tonnage presents a problem of another sort. re we face shipbuilding needs, the e of which the world has never seen. cept for the big bombers that can to the scene of action, all the tanks and airplanes produced in the converted Detroit automobile factories and all the munitions manufactured at rdance factories will be useless unless get the ships to take them to our diers. A thousand MacArthurs would be helpless without men, and the men in turn would be helpless without arms and supplies. If we are to keep Australia from becoming a second Bataan, we must have ships. Never before have men faced such a problem in transportation and never have the stakes been so high. It is not a question of "Can we do it?"—We've **GOT** to do it.

We have built and we are building more ships in less time than they have ever been built before, but not yet are we building enough. BUT WE WILL! Anyone who doubts the ingenuity of the American people should take a look at the shipbuilding industry. It has been completely revolutionized within the past two years. Some of the most successful shipbuilders we have are men who have never built ships before. They have contributed innumerable ideas which have speeded production beyond belief.

New developments are constantly being presented to the Commission and many have been accepted. In New Orleans today, four shipways are being laid down, each a mile long. The ships will be built on a moving assembly line, similar to the assembly-line method employed in the automobile industry. The yard promises to produce 200 ships by the end of 1943.

Several weeks ago I went to Portland to deliver to the Oregon Shipbuilding Corporation the Maritime Commission's "M" flag for Merit for the best shipbuilding record in the country. There could be no more inspiring example of American genius for effective action than this yard, and the two new ones under construction at nearby Vancouver, Washington, and Swan Island. I cannot describe it better than to paraphrase a recent article in one of our daily papers:

> "Work alone either on the part of management or labor hasn't accomplished the miracle of 28 ships launched, 18 delivered in less than a year, or the ship-every-four-day pace the yard is now hitting. Management is the key to success. Work is the most important single factor. Next in order are organization, 'flow' of materials, analysis of problems, heavy equipment, design and openmindedness as further reasons for a yard's success. There is, however, considerable of that very essence of assembly-line production — 'repetitive operation.' This is achieved by a flow of materials from plate storage to plate shop to assembly bays to shipways. An important improvement in this technique will be the use of an assembly shop, now under construction. In this building single crews will have single tasks. Some will build bottom sections, some lateral bracing sections, others transverse sections, some decks and so forth. When the assembly shop is functioning, no one knows how much faster schedules will be. In tackling shipbuilding problems, the management has no other precedents than those of varied construction experience. They have handled heavy equipment and think in terms of big machinery. They have the heaviest cranes and can lift larger prefabricated sections. The management is not trammeled in any way by antiquated shipbuilding tradition. Summing up the reasons for the yard's progress, Good labor is the first reason. The men want to work. Next is community cooperation. We call in the other boys to get the benefit of all our supervisors' ideas."

CAPTAIN EDWARD MACAULEY "Delivers the goods" at San Francisco Maritime Day lunch.

The shipbuilding yards on the Pacific Coast are making great records. For the year to date, the three top yards in the construction of Liberty ships are all on this Coast. And the other day, in looking over a tabulation of anticipated deliveries, I noted that of the next 32 Liberty ships to be delivered by all the yards in the country, 20 of them will come from those three West Coast yards.

Maritime Labor

The shipbuilders produce the ships; the operators, now acting as agents for the War Shipping Administration, run them; but the foundation on which this great program of maritime transporta-

Pacific Coast Yards

DELIVER THE SHIPS

THIS OUTFITTING DOCK at the Oregon Shipbuilding Corporation yard is one of the busiest spots in the U. S. A. New records for delivery of EC-2s being smashed every week.
(Maritime Commission Photo)

HERE IS AN EC-2 READY TO LAUNCH at California Shipbuilding Corporation. Note the huge stacks of prefabricated parts ready for the next hull. A Liberty hull goes over every four days.

WELDING IS FAST DISPLACING RIVETING in American Shipyards. Upon the product of this man's art, and of thousands like him, depends the delivery of vital war materials to our fighting men.

tion rests is labor. The men on the shipways, the men who load the cargoes,—above all, I think, the officers and men who take the ships out to sea, are at the very heart of our war effort. No one knows better than they what we are fighting for. And don't think they aren't fighting because they are not in uniform, for they are writing a page in our history that is ablaze with glory. They ran the blockades to Corregidor and Bataan with the chances two to one against their geting in alive,—but they ran them. They have been torpedoed and shelled and driven into flaming water and leaky lifeboats, yet when they come to our beaches, sometimes dying from exhaustion and exposure or burned from blazing oil, ask any one of them what he is going to do and you will get the reply, "Ship out again!" There is no Gauleiter to threaten them, no discipline of military service, no compulsion other than their understanding of the job to be done and their recognition and acceptance of their part in it.

Take the case of the steamer Coast Farmer, a familiar name to those of you here who are in the shipping business. The crew of this old ten-knot freighter volunteered for the dangerous service of running the Japanese blockade to Corregidor. She was bombed on the way in, bombed while discharging badly needed supplies for General Wainwright's heroic men, and bombed on the way out through seas infested with Japanese bombers and destroyers. The performance of this crew in the slow old ten-knot freighter is one of the finest chapters in the history of the American merchant marine.

I'd like to quote from a letter written me by a member of the Sailors' Union of the Pacific: "These American sailors went through hell for days and weeks in lifeboats, with no water at times. Some of them were burned alive in burning oil on the waters; some were eaten by sharks; some were bombed out of their bunks. In most instances, these men lost their lives because they had no protection, no guns, nothing. The American seamen are no heroes. They don't want to be heroes. They want to be left alone to do their duty." I guess I don't know a hero when I see one, but I do know when a cause is served by men like that, there can be no doubt of its final triumph.

We Must Win

There is one—and only one—paramount objective before us: TO WIN THIS WAR. Every plan, every action must be weighed in the light of this test: Will it help to win the war? Is there any expenditure or sacrifice of energy or of money that is too great if, when tested by that question, you find that it will help to bring victory to the United Nations?

The intiative and the imaginative powers of our men and women are vital factors in the industrial and commercial forces that support the armed forces. This is a battle between obsolescence and creative genius. The Maginot Line was obsolete because the initiative and the imagination that created it was obsolete. And every day, every week, the flexibility of our minds to adapt ourselves to prosecuting the war becomes a more vital factor in determining whether the United Nations will win or lose.

Wherever there is a fixed rule—a preconception—there lies the danger of defeat for the man who blinds himself to change, and the opportunity of victory for that man who with courage, imagination, and initiative makes the rule obsolete.

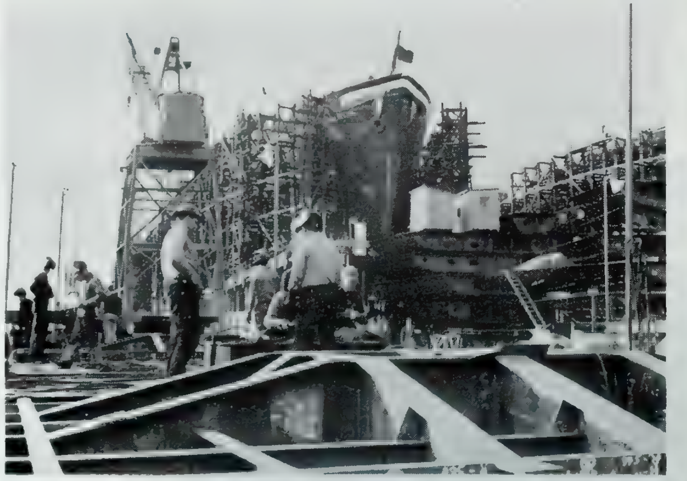
Pacific Coast Initiative

I believe the maritime interests of the Pacific Coast know what I mean. You have illustrated what can be done. You have taken the initiative in cooperating to place your personnel, your facilities, and your experience at the service of the Army, the Navy, the War Shipping Administration, and the country as a whole. The successful handling of stevedoring and terminal operations is particularly noteworthy. Our fighting power has been immeasurably strengthened and the initial difficulties of organization and operation have been minimized because of this cooperation. We are not going to thank you for what has been accomplished; we do ask that you double your efforts.

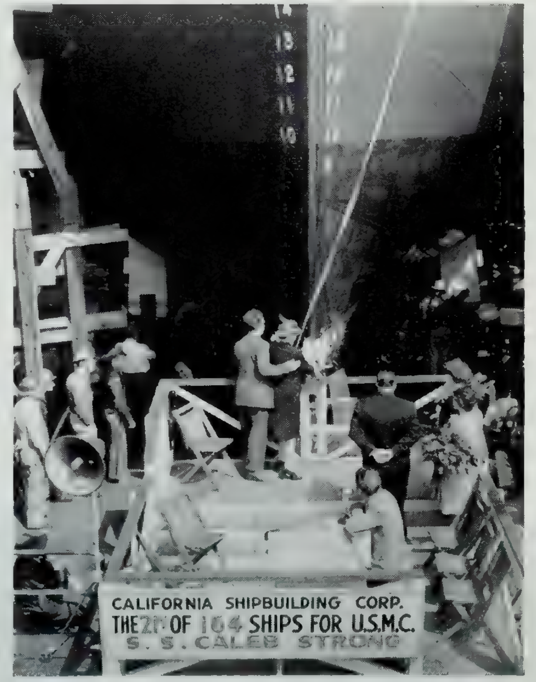
Are you aware that in the Government service those engaged in war shipping activities are given equal rating with the Army and the Navy? If we have this recognition, we must assume equal responsibilities. Are we showing the courage of the American Volunteer Group? Are we experiencing the daring of the torpedo-boat commanders? Are we enduring the tortures and hardships of the heroes of Bataan and Corregidor? Have we shown the strength of the citizens of London, of Chungking, and of Moscow? Well, we haven't had the same tests, but we should be making comparable sacrifices and contributing equally to the combined striking force of the United Nations.

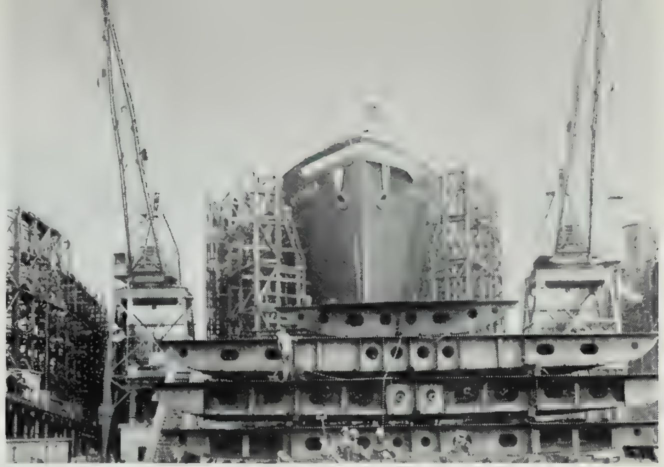
Through shipbuilding and ship operation and their related activities, thousands of our men and women are taking their places in the front lines of battle. This, however, is only one of the gains we are realizing from our work—gains that outweigh any monetary problems which may be by-products of change and pressure for action. This is not the time nor the place to discuss the value of the experiences we are having because of adjusting ourselves to and prosecuting the war. The shipbuilding effort, the world-wide operation of vessels, and the many new problems in insurance, law, terminal and stevedoring activity are all testing our capacities. The record is showing that we are equal to the test. And out of it will come a host of practical, intelligent maritime personnel in all walks of life that will guarantee the American merchant marine an aggressive and prosperous future. The present cost is great. The future product in our kind of world will be worth it.

A wise man once said to me: "The American people are a great people, but they have never been licked, and not until they have taken a licking will they become truly great." Well, we have taken a licking now, but we don't stay licked. Slowly the strength of America is crystallizing into that unity, that weightiness of the many in one that is the soul of America, and as w go forth, as Henry Wallace put it, "t cleanse the plague spot of Europe which is Germany, and the hell hole o Asia—Japan," that American soul wil be quick to answer and our feet jubilant.



AT THIS GREAT SOUTHERN CALIFORNIA YARD the tempo is now set at a launching every four days. Here are a few of the recent Liberty hulls in various degrees of launching. At upper left are W. A. Bechtel, Carl Flesher, and J. M. McCone pleasantly reflecting over the record.


CALIFORNIA SHIPBUILDING CORP.
THE 21st OF 164 SHIPS FOR U.S.M.C.
S. S. CALEB STRONG



Two Merchant Ships a Day Before the End of May

The Shipbuilding Program is Far Ahead of Schedule and Pacific Coast Yards are Leading

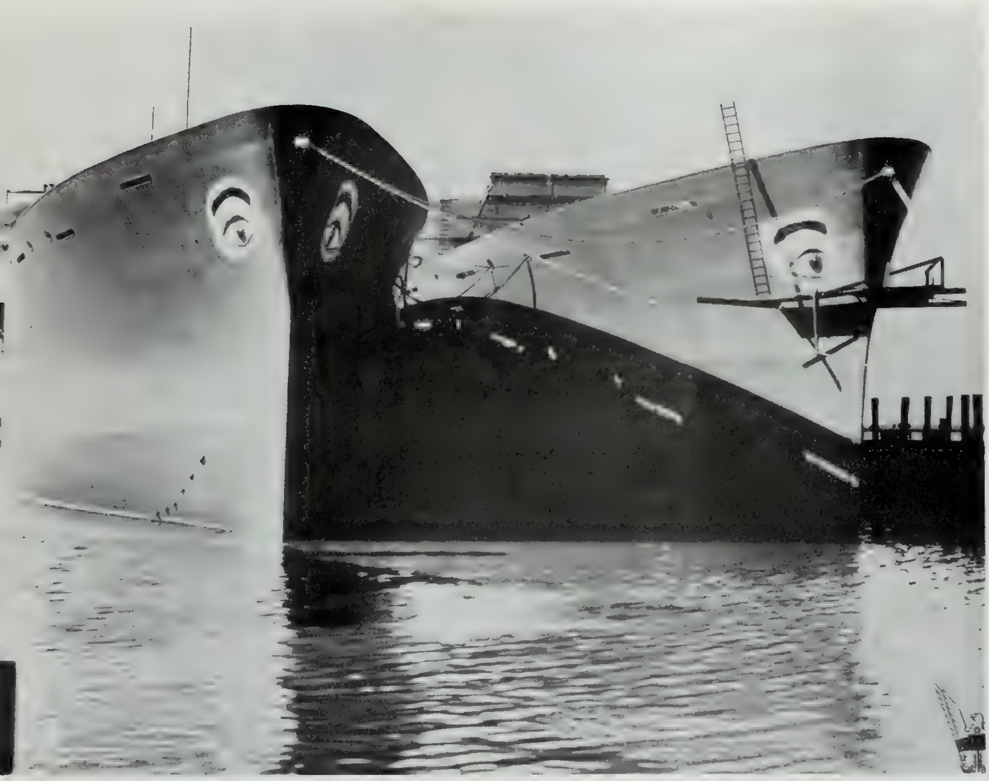
MAY IS THE AMERICAN Maritime month. The 22nd of May—anniversary of the first American steamer crossing of the Atlantic Ocean—has been officially named Maritime Day, and the week in which that date occurs, as Foreign Trade Week.

In May of this year, especial national attention was focused on Maritime Day because of the vast shipbuilding program now beginning to function at full speed in American shipyards working on the Maritime Commission program which are delivering ships at a combined rate averaging two a day. This rate will be increased to three a day before fall, and around the first of January, 1943, should reach four a day and better, and must maintain that average throughout that year if the goal of 23,000,000 dwt is to be reached by January 1, 1944.

There can be no slow-up allowed in this program. This is a war of ocean transportation . . . a war of ships . . . the ocean distances are vast and the traffic needed is tremendous. Every man in a shipyard, or in any shop, mill, or mine producing materials, equipment or machinery for ships, is actually a first-class fighting soldier in the nation's second line of offense.

Every state in the Union contributes to this program. Hundreds of shops, millions of workers are in it. The land transportation system of the country is vitally involved. Many trainloads of ship steel, ship equipment, ship machinery are constantly in transit. In April the movement of steel for this program was over 28,000 tons.

THE NEW YARD OF THE CONSOLIDATED STEEL CORPORATION AT WILMINGTON, CALIFORNIA, SHOWING THREE HULLS IN PROCESS



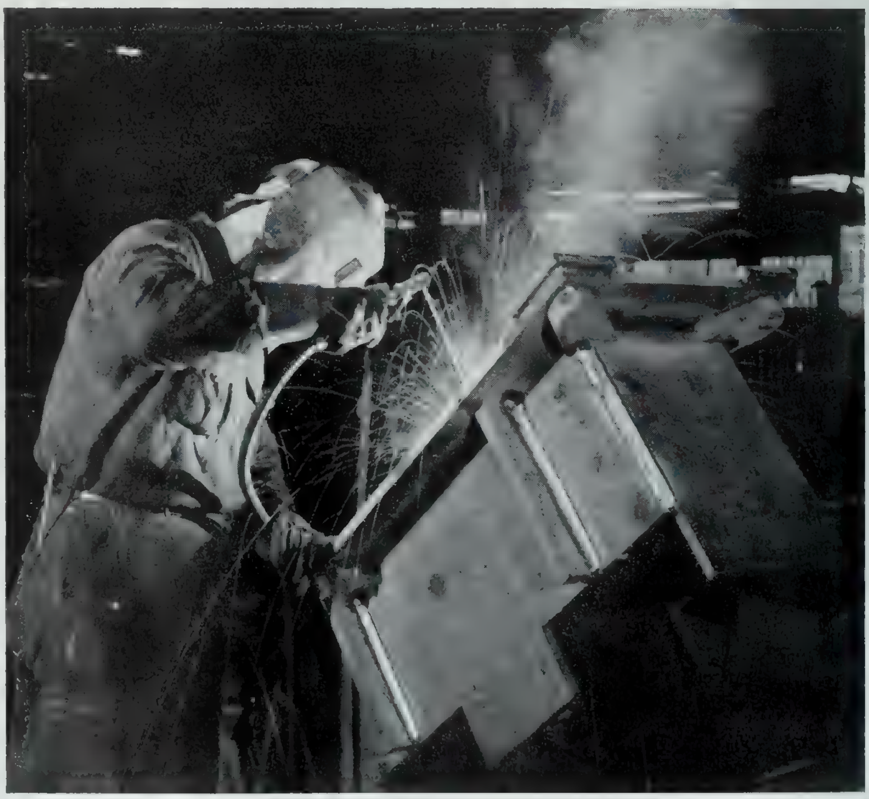
NO NEED TO TELL a citizen of the San Francisco Bay district where these ships were built. Eyes front and zip your lip! These standard C-2 hulls are very efficient and reliable cargo carriers with a good turn of speed and the most economical steam plant ever put into a hull. They are very much in demand by the Army and Navy, and will be great commercial vessels after the war is over.

(Maritime Commission Photo)

This means an all-out effort with no lag anywhere along the complicated line. It means that politicians must sit quietly on the side lines, stop asking foolish questions, and watch production engineers do the job. It means that we must have a production arena in which there is an irreducible minimum of regulations and paper work and a maximum application of mind, men, and machines.

When all the new shipyards are in production and with the existing yards showing consistent improvement in speed and efficiency, we predict that the present program will be finished well before the end of 1943 if the steel, the machinery, and the equipment is scheduled to meet the needs of the yards.

By next May the delivery rate should be five merchant ships a day. This is not a wild guess. Rear Admiral Vickery, who is closer to the program than anyone, declares that, if we get the steel, we will build 20,000,000 deadweight tons of ships in 1943. That would be somewhere between 1700 and 1900 vessels, which means an average of from 4.6 to 5.2 ships for every calendar day in that year. The figures do not include the tremendous program of the U. S. Navy.



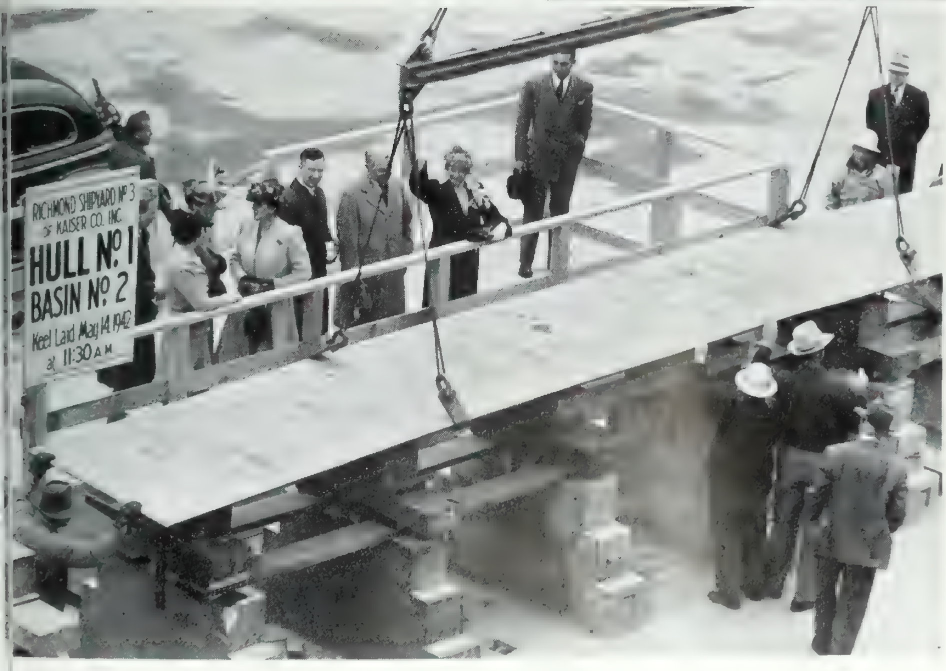
MANY CRAFTS outside the shipyards contribute to this great shipbuilding program. Here is a welder in an inland shop fabricating a base for marine machinery. All such material, equipment, labor, transportation, inspection and installation must be coordinated to make deliveries possible.

(General Electric photo)

At First Launching —First Keel Laying

MISS ELEANOR H. VAN VALEY, secretary to Admiral Land, functioned at two very interesting events on her recent trip to the Pacific Coast. She sponsored the C-1 Mormachawk, first ship launched from the new Wilmington yard of the Consolidated Steel Corporation, and laid the first keel at the new Richmond Number Three yard.

ABOVE: MISS VAN VALEY is shown accepting a token gift from Emmet J. McCormack, vice president, Moore-McCormack Lines, after sponsoring Mormachawk, and (right) posing with Mrs. Alden G. Roach, wife of the president of the Consolidated Steel Corporation.



AT LEFT: Miss Van Valey, Carl Flesher and Clay Bedford officiate at the keel laying for the first of a new type, the C-4, and the first keel laid in the building basins of Richmond Shipyard Number Three of Kaiser Co., Inc.

"Chins Up"

Your Ships Are on the Way

by Rear Admiral Howard L. Vickery

Vice Chairman U. S. M. C.

A FEW HOURS AGO, I received a telegram from the West Coast stating that today the Oregon Shipbuilding Company of Portland, Ore., delivered three vessels. The first of these is the Samuel Moody, the keel of which was laid 71 days ago; the second is the John Sevier, the keel of which was laid 65 days ago; and the third is the Jonathan Edwards, the keel of which was laid 60 days ago—71 days, 65 days and 60 days, from keel laying to delivery.

This Oregon yard and eight others, which were started about the same time, have but recently celebrated their first birthdays.

As a matter of fact, though our construction program has been expanded over 500 per cent in the past year, we are building vessels today in just about one-half the sixteen old-line yards which were building for us eighteen months ago. So the Commission began to explore the possibilities of establishing a number of new yards designed to build a standard type of ship in the shortest time possible, making the greatest use of available materials. Eventually nine yards were started. Their sites little more than a year ago were wastelands. Today they are all going concerns and all of them are delivering ships.

Our expansion did not stop there. The facilities of existing yards not being utilized by the Navy were expanded as rapidly as possible. Later, other new yards were brought into being.

There is no peacetime backlog of shipyard equipment and shipbuilders. Just to mention a few of the problems which have confronted an expanding shipbuilding program, in the past year more heavy lift cranes than normally would be manufactured in ten years had to be acquired; welding machines by the thousands had to be procured; there was dredging and pile driving to be done; ways and buildings had to be erected; and above all, literally thousands of inexperienced workers had to be trained.

Is Ship Production Slow?

Maybe it seemed slow to the men who, since February of this year, in the face of the gravest of difficulties in the procurement of equipment, have carved a shipyard out of mud flats and already have laid four keels. Maybe it has seemed a sluggish task to the men who have launched three ships from a single way since the first of the year. If this be so, then perhaps we have something to look forward to when they really get going.

Early this year, the President set the nation's merchant tonnage objective at eight million tons to be delivered during 1942 and fifteen million tons during 1943. This 1942 objective contemplates the delivery of tonnage almost equivalent to the total of that under the American flag a year ago.

Naturally, the question going through your minds right now is, "Can it be done?" The answer is "Yes"—provided we get the steel.

Labor and Steel

The entire success of the shipbuilding program deepnds more than anything else upon a continuous flow of labor, and a continuous flow of steel. Labor is proving itself equal to the gigantic task. Shipyard labor and management are cooperating as never before. So far, steel has been the principal bottleneck in the shipbuilding program. The demands upon the steel industry are beyond comprehension. Steel must be had for guns, battleships, tanks and other weapons of war. It is indispensable to our industrial life. We simply can't build ships without steel.

By the end of the year when all yards will have attained full production, the rate of output will be a million tons a month, and that, ladies and gentlemen, is almost as much tonnage as was delivered in the entire year of 1941. In 1943, when all the yards are in full production, if we are able to obtain the steel, I am confident that American shipyard workers will deliver, not the fifteen million-ton objective set by the President, but upwards to twenty million tons.

So far this year, the Oregon Shipbuilding Company has deliverd into service thirty ships, and before the year is out, if it gets the steel, it will deliver not less than sixty more. Many other yards are doing an equally fine job. We have always looked upon our World War shipbuilding effort as a tremendous accomplishment. It was. In five years, from 1917 to 1922, a total of 13,658,411 tons was delivered into service. Assuming we get a break on the intangibles, by the end of 1943, American shipyards should turn out twenty-eight million tons; do more than twice as much in two years as the World War yards did in five years.

Figures alone fail to tell the whole story. As humans, as Americans, as lovers of baseball, or anything competitive, we like the action more than the score. Just knowing that we are going to win doesn't ease the sting of Pearl Harbor. Few of the ships constructed under the World War shipbuilding effort were ready for service before the Armistice. In the past few weeks, the Japs have reeled from the blows of Yankee bombs in the Coral Sea. Many of those bombs were transported from American shores to the theater of action in Liberty ships, of which the keels were laid down since Pearl Harbor!

The Coral Sea victory was twofold —a victory for our gallant soldiers and sailors and a victory for the men in the shipyards.

Shipbuilding Cooperation

This shipbuilding victory would not be possible without the splendid cooperation given the new yards by the old established companies. There are no secrets among shipbuilders — new methods which prove successful are freely interchanged. There is keen rivalry, but no jealousy. They're pulling together. As each new yard has been started, we have sent the key men of the new organization to visit various of the old yards so that they might counsel with management and engineers and have the benefit of their experience in laying out the plants and ways. Likewise, in recent months, we have sent the management of the most recently established yards to visit those which were started a year ago, and as a result the last five or six yards which the Commission has sponsored are probably the finest layed-out shipyards in the world today. Into their construction is going every proven production facility and the experience of the entire industry. It is just about two and a half months ago that the final expansion was undertaken. Contracts were entered into for the construction of four new yards, each yard to have six ways, all of them to build the same type vessel, and each of them receiving a comparable number of vessels to build. One of these yards is at Providence, Rhode Island; another is at Brunswick, Georgia; the third is on the Florida Gulf Coast at Panama City; and the fourth is at Sausalito, California. When they get into production it ought to be a horse race. Watch them!

The Liberty Ship

The Liberty ship in service is proving itself a useful, well-rounded vessel. The time is short. We do not have too many shipbuilders; we do not have too much machinery; we do not have an excess of steel. Production records already achieved prove clearly that in the construction of Liberty vessels, as compared to any other size or type of emergency ship which has been proposed for construction, we are getting more deadweight tonnage or carrying capacity, per day of construction, per man-hour of labor, per horsepower of propulsion machinery and, most critical of all, per ton of steel!

REAR ADMIRAL VICKERY . . .
and a slogan poster featuring the new "Ships for Victory" button.

While we are building Liberty ships by the hundreds, at the same time we are building our long-range type ships, right up to the limit of the turbine and gear capacity. We have expanded the facilities of the turbine and gear manufacturers manyfold and as fast as these expanded plants can turn out the turbine units we'll build more long-range ships. We're proud of our C-type vessels. We know they're the finest in the world. More than half of those the Commission has built since the inception of its program are today serving the Army and the Navy.

Our Ship Personnel

We are proud of our soldiers, our sailors, and our marines, but let's not forget the men that sail the ships.

The lips of some of the men who have gone out on your ships are sealed forever. Fine American boys have found their graves in the sea, because the insane ambitions of madmen have swept justice from human hearts and forced a peace-loving people into a terrible war.

These seamen will never be identified with glorious chapters like Wake Island and Corregidor. Their names will probably appear in the record only as seamen of prosaic little cargo ships that sailed out in line of duty. If Hitler and his partners in crime can be said to have made one outstanding error, it was in neglecting to reckon with the courage of the men who go to sea in American ships.

We all have the deepest gratitude to our soldiers who fought so grimly on Bataan, to our naval sailors who stained Macassar Straits with Nipponese blood, and to our airmen who carried the holocaust to Tokio. To those who have died for you and me, no tribute can be too high. Without the sacrifice they have made, victory would be long postponed. Yet all these deeds of valor mean no more in the outcome of the war than the labors of the workers who are building our ships and the men who are taking them to sea.

We honor the generals and the admirals who conceived the patterns of these operations. But the strategies of those engagements have done no more to save this Nation than have the level-headed planning and direction of a man who is serving his nation and serving it well, my chief, Admiral Land.

Without the ships we are building, without the ships we are going to build, we can never win this war. But be optimistic! Keep your chins up! Your ships are on the way!

(Abstract of an address before the Mariti
dinner of the Propeller Club, Port of New

Oregon Shipbuilding Corporation

Receives Merit Flag From U. S. M. C.

THE OREGON SHIPBUILDING CORPORATION YARD at Portland, Oregon, has consistently lead in production over all the American yards building EC-2 (Liberty) ships. During April, this yard delivered 10 vessels and is currently putting a ship in service every three or four days.

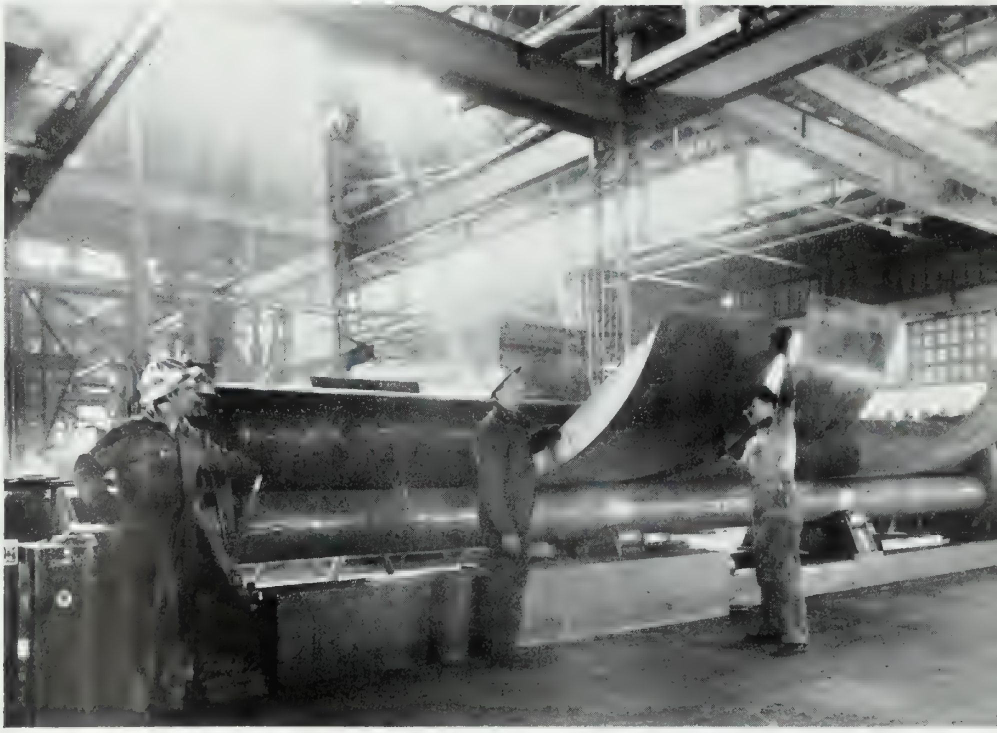
In recognition of this record, the Maritime Commission, on April 27, at the launching ceremonies of the S.S. Samuel Moody, presented the working force of the Oregon Shipbuilding Corporation with the "Merit Flag." The presentation was made by Captain Edward Macauley, U. S. Maritime Commissioner, assisted by Carl Flesher, Director of Construction for the Pacific Coast, U. S. Maritime Commission.

Shop Workers Help Set the Pace

TRIMMING PLATES with oxy-acetylene cutting torches in plate shop of "Oregonship." These flame-cutting machines are replacing the huge plate planers with very satisfactory results.

●

AN INTERESTING VIEW in the plate shop, featuring the big plate-bending rolls. Note the workman in center testing the bend with a template.



●

WELDERS WORKING on a tilting table. The fillet welds, which join plate structures, are more efficiently produced when worked "vertically down hand."

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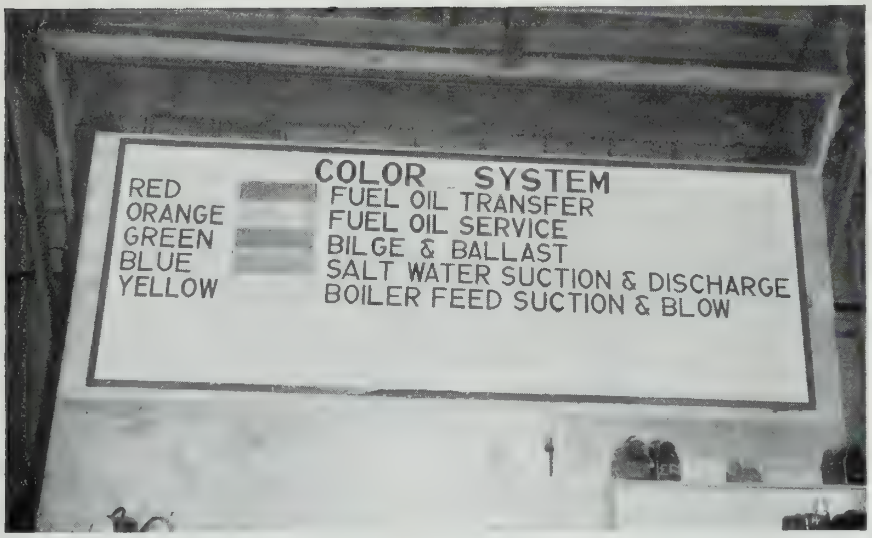
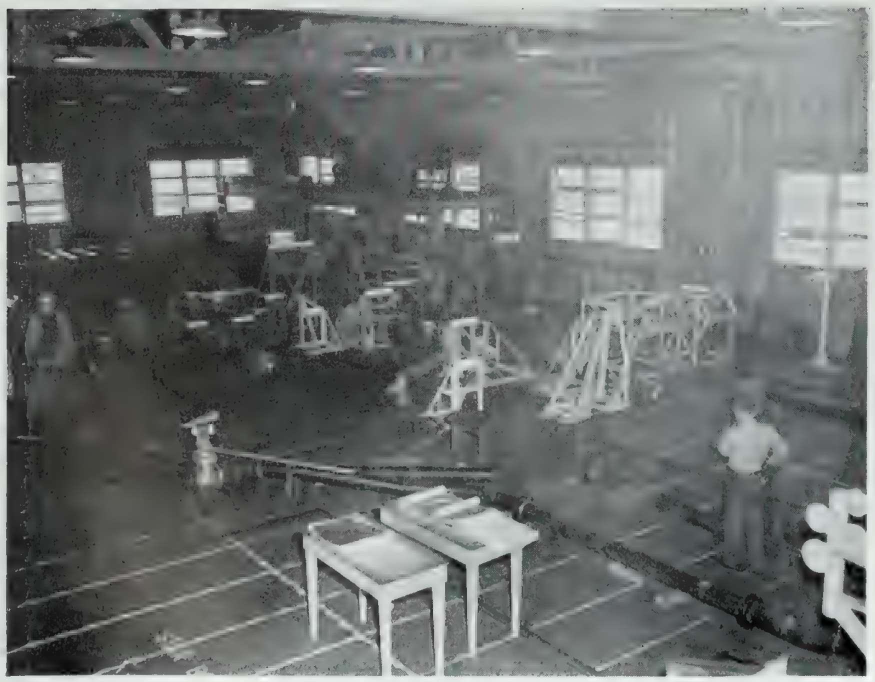
Prefabrication of

Liberty Ship Piping System

ONE OF THE EQUIPMENT ASSEMBLY IDEAS THAT HELPED OREGON SHIPBUILDING CORPORATION WIN MERIT FLAG


COLOR SYSTEM
RED — FUEL OIL TRANSFER
ORANGE — FUEL OIL SERVICE
GREEN — BILGE & BALLAST
BLUE — SALT WATER SUCTION & DISCHARGE
YELLOW — BOILER FEED SUCTION & BLOW

UPPER: Large board showing pipe color system.



LOWER: The pipe fabrication and assembly loft, showing some of the many mock-ups and jigs for assembly work.

At OREGON SHIPbuilding Corp., Portland, Ore., more Liberty ships have been delivered than at any other shipyard. Part of the reason for this record production of ships is found in the skill and ingenuity with which the minds of energetic construction leaders assault new problems. Tradition and usage in established shipbuilding plants do not trouble these men because they have never contacted these inhibitions. Tackling their new problems with perfectly open minds, they try out new short cuts and get some very interesting and effectively efficient solutions.

A very apt example of this is found in the Pipe Assembly Shop at this record-breaking yard. This shop and the methods employed were developed by Chester Spiering, pipe assembly superintendent, assisted by marine machinists, shipwrights and draftsmen.

A loft, 60 feet wide and 280 feet long, was converted into what is a full-scale model of the machinery space and adjacent areas of the Liberty steamer. The floor area was marked off accurately with colored lines representing the location of the pipes and fittings of the various piping systems. Jigs were built which indicate the exact position of openings in the structural members of the hull and of fittings on machinery and equipment. These jigs can be adjusted horizontally and vertically. They are painted with the color corresponding to the pipe system for which they are used and plainly marked to show the hull members and machinery represented.

Guided by the floor lines and the jigs, pipefitters fit the pipe to the right lines, and cut hangers for its support in the ship. Welders join the pipe lengths, and a whole assembly of pipes, manifolds and fittings for a certain tank top or bulkhead area goes to the ship intact, striped on the upper side with its proper color and accompanied by all the necessary hangers and fittings painted in correct color and packed in a crane skip. The location of pipe hangers is painted on the pipe by stencil, and each hanger is numbered for its location.

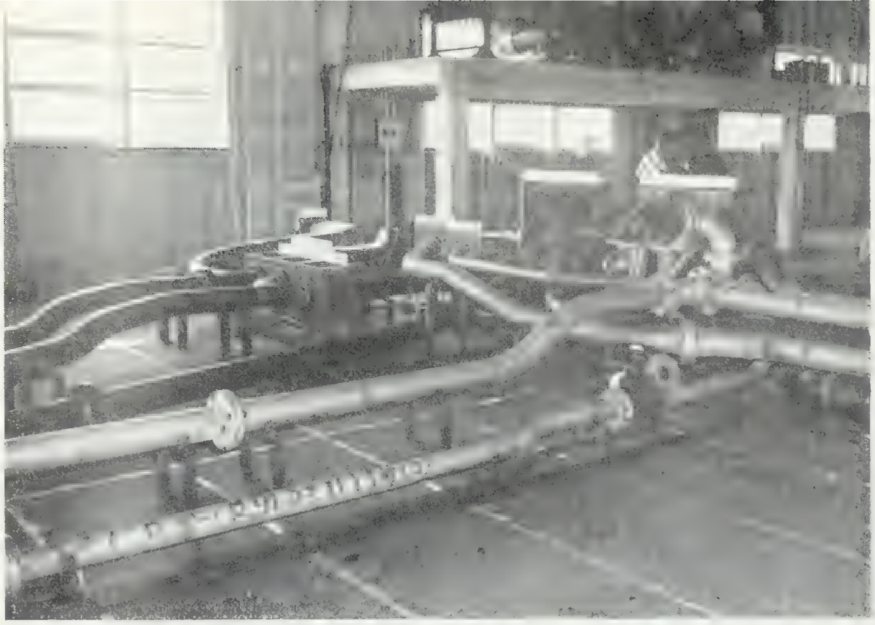
Anyone familiar with the old cut-and-try pipe-fitting methods can easily imagine the savings effected by this new method, because it minimizes:

(1) Breakage of fittings and valves;
(2) Loss of material;
(3) Handling of material;
(4) Transportation time;
(5) Welding time;
(6) Hazard of metal fume fever; and
(7) Congested working conditions in outfitting engine room.

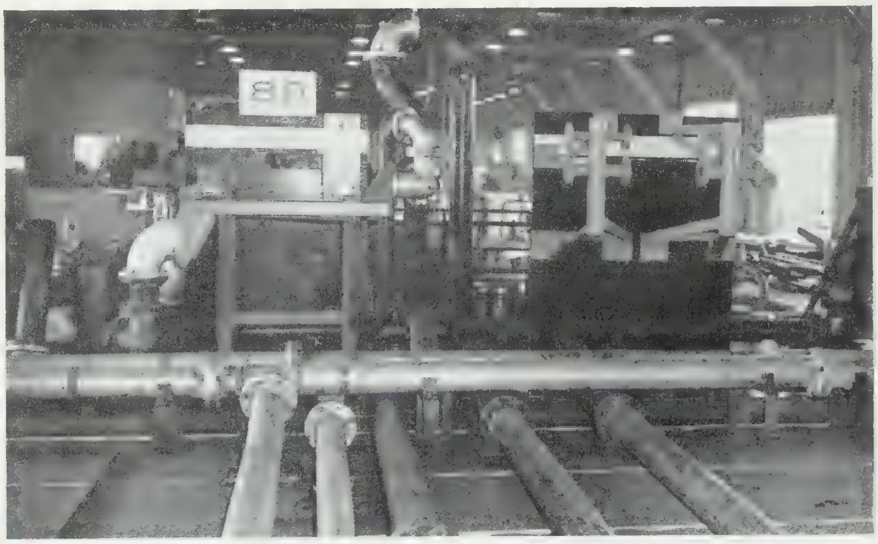
In the pipe assembly, adequate space is provided for a crew of 40 or more welders and pipe fitters. This crew welds on flanges, welds pipe connections, adjusts lengths, and otherwise handles and fits approximately 85 per cent of the piping in the machinery space which formerly had to be done in the hull. It is estimated that the system reduces welding time by over 80 per cent.

Plans are now developing to make the prefabrication of piping systems 100 per cent complete at the Oregon Shipbuilding Corporation.

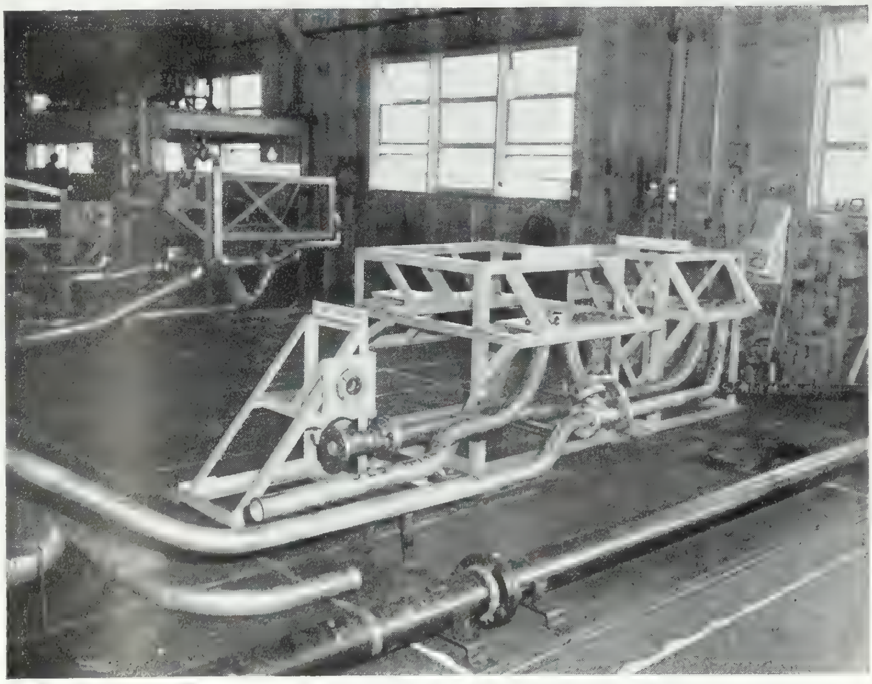
One of our illustrations shows the assembly of auxiliary steam manifolds being laid out on the bulkhead at Frame 88. The fittings and connecting pipes for fuel oil heaters and fuel oil service pumps are laid out in the same manner. Under the old system, these installations would be laid out in the hull from a scaffold 20 feet or more above the base line.



FABRICATION AND ASSEMBLY of bilge and ballast suction lines and manifold.



AUXILIARY STEAM MANIFOLD for bulkhead at Frame 88.



MOCK-UP IN USE for assembly of piping to main feed pump.

Merchant Mariner and Shipbuilder Training

A Clearing House for Programs, Suggestions and Ideas ON THIS ESSENTIAL WAR-WINNING JOB

Training Program TO BE EXPANDED RAPIDLY

THE RECENT PRESidential order transferring from the Maritime Commission to the United States Coast Guard the function of training officers and unlicensed men for the American merchant marine, places a new duty upon the service, the immediate importance of which can hardly be exaggerated. With 2000 new merchant ships scheduled for delivery in 1942 and 1943, approximately 70,000 unlicensed men and 16,000 licensed officers will be required for their manning. And for the deliveries of ships scheduled for 1944, an additional 50,000 men and 10,000 officers will be necessary. While it is recognized that many veteran seamen are now engaged ashore and that a certain percentage of these will be drawn back to the merchant marine through liberalizing of the requirements for advancement in grade, the bulk of the needed men will be recruited from among persons with no sea experience. While the merchant marine training program which in the past has been carried out by the Maritime Commission, or for it by the Coast Guard under the so-called Maritime Service, has been both extensive and important, the program now envisioned will far exceed it in scope. The merchant marine training program now under Coast Guard direction consists of several closely related parts, each of which will be developed to the fullest possible extent. For the training of men with no sea experience whatever, and for the training of men now in the merchant service but considered suitable material for promotion to higher grades, the Coast Guard will continue to operate the training stations of the so-called Maritime Service, and will add to these as many new stations as may be required. The unlicensed personnel necessary for the manning of the rapidly expanding merchant marine will be trained in this manner, and large numbers of men with previous sea experience will be qualified for promotion to officer status, and for further promotion within the officer grades.

Cadet System

For the training of young men with suitable educational background to become officers in the merchant marine, the Coast Guard has taken over from the Maritime Commission its merchant marine cadet training program, and also the supervision of the various State nautical schools. From these facilities, large numbers of young men, after intensive academic training as well as supervised training aboard ships as cadets, will pass into the merchant marine as licensed officers.

Cadets of the United States merchant marine are given their preliminary training at basic schools conducted at New York, New Orleans, and San Francisco. At these schools, the cadets are given a two months' course in life-boat work, visual signaling, nautical subjects, and naval science. Uniforms, textbooks, quarters, subsistence, and medical and dental care are furnished by the Government, and they are paid $65 per month. The next six to eight months, dependent on voyage time, are spent aboard active merchant ships where the cadets are imbued with the practical knowledge essential in a seagoing career. During this period they are furnished subsistence and quarters and $65 a month by the operator of their vessel. Next phase of their training is spent at the Merchant Marine Academy at Great Neck, Long Island, New York, where they are given an advanced course, of from six to eight months, in nautical subjects, after which they are qualified to sit for examination for a license as a third mate or a third assistant engineer. If successful, they are also commissioned as ensigns in the Merchant Marine Reserve of the Navy, but remain in an inactive status so long as they are employed on merchant ships. A total of approximately 6000 such cadets are expected to be graduated in the years 1942, 1943, and 1944. The training ships *Nenemoosha, Sea Love, Felix Reisenberg,* and *North Star* are maintained in connection with the cadet system.

In order to qualify for appointment as merchant marine cadets, candidates must be unmarried citizens of the United States, native born or naturalized for at least ten years, between the ages of 18 and 23 years, with a high-school education or its equivalent, in good health and of good moral character, and able to qualify for enrollment in the Merchant Marine Reserve, which is a prerequisite.

State Academies

The States of California, Maine, New York, and Massachusetts maintain State maritime academies which are operated with Federal aid and under the supervision of the Merchant Marine Cadet Training System of the Coast Guard. For admission to these academies, cadets must possess practically the same qualifications as for appointments to the Merchant Marine Cadet Corps. Cadets entering these academies must pay a tuition to the respective States which operate them. However, Federal scholarships will be available after July 1, 1942, to such cadets as are selected for appointment to the State maritime academies by the Coast Guard. These schools are expected to graduate during the years 1942, 1943, and 1944, a total of approximately 1200 cadets who will become third mates and third assistant engineers in the merchant marine and ensigns in the Merchant Marine Reserve of the Navy. Three-month cruises are furnished annually on Coast Guard training ships, loaned to the respective academies for this purpose.

Officer Schools

Potential licensed officer schools are maintained by the maritime service at Fort Trumbull, New London, Conn., and at Government Island, Alameda, Calif. At these schools, unlicensed seamen with at least 12 months' sea service are given a four-month course to qualify them to sit for licenses as third mates and third assistant engineers. Uniforms, textbooks, quarters, subsistence, and medical and dental care are furnished by the Government during the training period. They are also paid $99 per month. The capacity of these schools is approximately 4200 men per year and plans are under way for their further expansion.

Crew Training

For the training of deck, engine, and steward personnel the Maritime Service operates shore stations at Hoffman Island, New York Harbor; St. Petersburg, Fla.; and Port Hueneme, Calif., and has under construction a new station at Sheepshead Bay, Long Island, N. Y., with a capacity of 10,000 trainees which will be ready September 1, 1942. At these stations, enrollees, who must be American citizens between the

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Maritime Training

WE ARE AT WAR!

Millions of men must be trained!

Trained for the Army . . . trained for the Navy . . . trained to build tanks, Airplanes, ships, and trained to operate these vehicles.

Thus, a vast, rather chaotic, training program has evolved all over the nation.

In the marine portion of this program, we see: great expansion of the private commercial schools; a tremendous increase in the classes devoted to the shipping and shipbuilding arts in the public schools; a well-directed and very large training program instituted and carried on by the shipbuilding industry; an attractive and effective training system initiated by the Maritime Commission, and recently turned over to the U. S. Coast Guard (see separate article in this issue for details); and considerable special textbooks and curricular work being developed by the educational departments of the various states and the Federal Department of Education.

Pacific Marine Review shares with all right-thinking Americans a vital interest in the success of these training efforts. We need ships and we need qualified men to build and to run them.

In thinking about these various and widely-separated efforts, and in discussing the matter with ship owners and shipbuilders, the suggestion has been made that a training forum in this magazine might be of value to the effort and to the trainees. This section is the result of that idea.

We hope that as the section develops, it may serve as a true forum for the interchange of constructive criticism and of progressive ideas. The present first duty of every American citizen is to win this war. If any trainer or trainee in any school or industrial training plant has a method that seems to be better than the methods used by other institutions, it is his patriotic duty to spread the knowledge of that method to every American war effort wherein it can be profitably employed.

Pacific Marine Review will publish any suggestions or ideas that seem to have merit, and will also try to contribute some thoughts of its own. Anyone is welcome to use any of this material, should he think it useful.

Among hull construction superintendents and foremen whom we have contacted, there is almost unanimous comment that the training is good, but that it is too specialized. Questions develop the specific reasons for this comment about as follows:

Take a welding school. The trainee practices welding under instruction and supervision until he can produce practice welds of both fillet and butt types that will meet the requirements of the American Bureau of Shipping, and/or of the U. S. Navy. He then is a certified marine welder. He has also had instruction and practice in reading blue prints and the standard welding symbols. But in practically all cases, he knows nothing about the hull of a ship, nor has he the least understanding of the reasons why ship construction is different from building construction.

Having heard this comment on all sides, we feel that it would be of common interest to insert here, from time to time, articles on the fundamentals of shipbuilding and marine engineering and comments on the application of those fundamentals to the various skills and arts taught in the marine training schools.

ages of 18 and 30, are furnished with uniforms, quarters, subsistence, medical and dental care, and the use of the recreational facilities. Attached to these stations are the training ships *American Seaman, American Sailor, Empire State, Vema, Boston, New York, Joseph Conrad,* and *Tusitala,* to which within the next few months, will be added the *Alleghany, Berkshire, City of Chattanooga,* and the new Liberty ship *American Mariner.* When these units are all in service they will have an aggregate capacity of approximately 16,000 trainees at one time. Since the course of training covers a period of three months, an annual turn-out of 64,000 graduates is indicated.

Upon completion of the course, the deck men are eligible for positions aboard ship as ordinary seamen and, after three months' sea service, as able seamen. The engine men are qualified for certificates as firemen, oilers and water tenders while the stewards are graduated as cooks, bakers, galley men, and mess attendants. Every enrollee is trained to be expert lifeboatman and receives instruction in gunnery.

Radio School

At Gallups Island in Boston Harbor the Maritime Service maintains a school for marine radio operators where men are taught not only to send and receive messages but to repair and rebuild radio equipment. The course formerly covered a period of 10 months, but has now been reduced to 6 months wherever possible. While in training, enrollees receive from $36 to $54 per month according to their prior training and ability. The capacity of the school is being increased to 600 men, and about 1000 radio operators per year can be graduated. Also at Gallups Island is maintained the specialized school for marine cooks and bakers. The capacity of this school is 200 enrollees and will soon be increased. With the course covering three months, the station can graduate 800 and soon 1000 men per year. Additional cooks and bakers are trained at each of the other units.

The War Shipping Administration is charged with the responsibility of manning and moving the ships and the Coast Guard must train the manpower not available from other sources.

THE FOUNDATION FOR THE SHIP

HAVE YOU EVER stood on an ocean beach after a big storm, when the huge breakers were roaring up on the strand, and watched the breath-taking beauty of the green crests, tipped and laced with white foam as the offshore breeze carried away great streamers of spume, forming irridescent rainbows in the sunshine? The beach trembles with the impact. Great movements occur in the wet sand.

"Boy!" you say to yourself, "this is great. Tomorrow I must bring Mary and the kids out to see this."

That night you bubble over at the supper table, and Mary is enthused . . . the kids excited. Next day the family runs out to the beach and there is that darned ocean . . . a black, oily, flat surface with scarcely a ripple. "Gee, dad," says one of the kids, "you sure got some imagination."

As you stand there, let this thought percolate. Yesterday and now you are looking at the same water—salt water—the foundation for every seagoing ship.

This salt water—the ocean which covers three-fifths of the surface of the globe—is the world's great highway of transportation. Its placid or tumultuous surface, into which you can push the frailest reed, and through which a child can safely dive, is the foundation which supports alike a surfboard or the Queen Mary; a canoe or a battleship.

If sufficient quantity of water of sufficient depth is available, the naval architect can float any weight desired, and he can very easily determine from the weights to be handled the volume of the vessel necessary to float them. This is so because of a fundamental quality of sea water. Whether this salt water is moving up and down in waves twenty-five feet high, or lying practically motionless and static, it has one quality that is always constant—its weight.

Sea water at ordinary temperatures and at sea level weighs 64 pounds per cubic foot.

When any object is set upon the water, it will sink until it has displaced a weight of water equal to its own weight.

These are the fundamental facts underlying all ship design and all ship construction. From these facts, it follows that:

Any substance which weighs less than 64 pounds per cubic foot will float in water; and

Any substance which weighs more than 64 pounds per cubic foot will sink in water.

A block of fir wood weighs from 30 to 40 pounds per cubic foot and will float with about half of its body out of water.

A block of mild steel weighs 493 pounds per cubic foot, and therefore will sink to the bottom.

Figure 1 illustrates these rules and examples.

At this point, someone is sure to ask, "If the steel won't float, how does a steel ship float?" That is a very good question, and in answering it, some of the basic rules concerning ship design and ship measurement can be already explained.

Let's take a cubic foot of steel, weight 493 lbs., and see if we can make it float.

Since a cubic foot equals 1728 cubic inches, if we heat this block of steel, and roll it out into a sheet $\frac{1}{16}''$ thick, we would have a surface area of $16 \times 1728 = 27{,}648$ square inches.

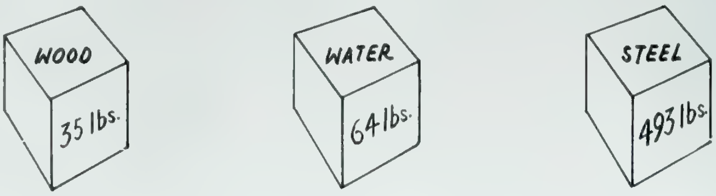


Fig. 1

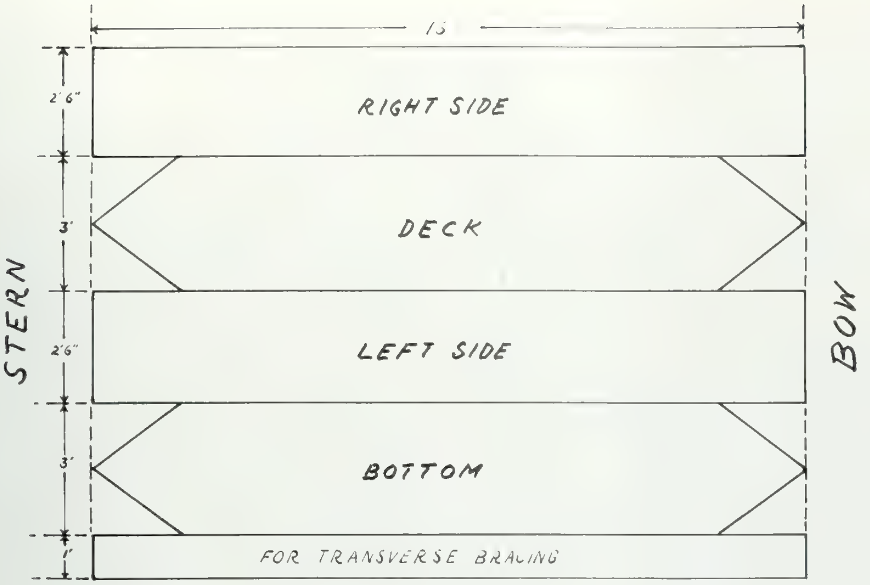


Fig. 2

If we make this sheet, 16 feet or 192 inches long, it would be $\frac{27{,}648}{192}=144$ inches$=12$ feet wide.

Now, if we notch this sheet as shown in Fig. 2, and cut a strip one foot wide off one side, we can bend it and weld it into a closed barge or boat, using pieces of the one-foot strip to brace the interior, and to make two holes with closure plugs in the deck, and using the triangular pieces to close the bow and the stern.

We now have a small all-welded steel barge, Fig. 3, 16 feet long, by 3 feet beam, by 2′6″ depth. The deck or the bottom or any horizontal plane in this craft would have an area of $12' \times 3' = 36$ sq. ft. for the parallel middle body and $2\left(\frac{2\times 3}{2}\right)=6$ sq. ft. for the two ends, or a total of 42 square feet.

Its weight will still be approximately 493 lbs. There is a little of the original steel left over, and a few pounds of welding rod added, which weights practically offset each other.

To float 493 pounds (by our rule) require the displacement of $\frac{493}{64}=$ 7.703 cubic feet of salt water. With 42 square feet of area for immersion, we would need for 7.703 cubic feet of displacement a draft equal to $\frac{7.703}{42}=$ 0.183 feet, or 2.2 inches. We see then that this little steel vessel will float with about 7 per cent of its body under water and 93 per cent out of water. Such a condition leaves her center of gravity too high, so that she is unstable and needs ballast.

Now we consult the American Bureau of shipping to get her load line fixed. This bureau fixes these lines from the viewpoint of ship safety according to the structure of the ship, the trades in which she will be engaged, and the nature of cargo. Since our barge is a properly welded structure, well stiffened, and with very small deck opening, we would probably be allowed to tow her with the deck awash. However, we will assume a freeboard of 5 inches, that is, we will place the load line 5 inches below the deck so that she will draw two feet when fully loaded. To get her down to that load line, we must sink her 22.8 inches further than she has sunk as an empty hull.

A very convenient figure much used by ship operators is displacement per inch of immersion. In our little craft, this would be $\frac{493}{2.2}=224+$ pounds. So, our craft must be loaded with $224 \times 22.8 = 5107.2$ pounds to get her down to her load water line. In other words, the cubic foot of steel which weighs 493 lbs., and will sink to the bottom like a shot, now floats safely, supporting its own weight plus a load of over ten times that weight.

Problem: Work out a similar ship from the block of wood, assuming ¾″ wood in place of $\frac{1}{16}$″ steel.

(To be continued)

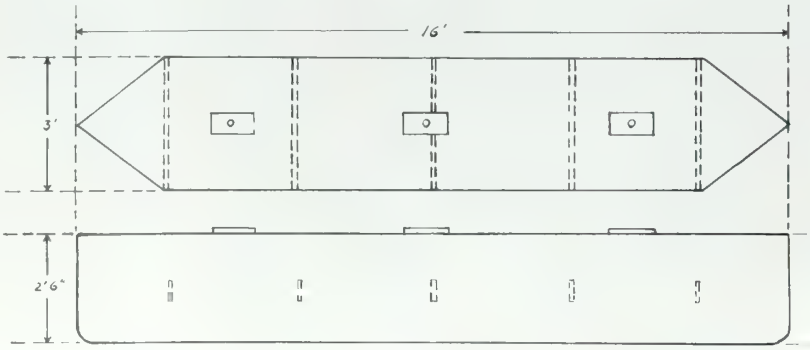


Fig. 3

U. S. Navy "Wings of Gold"

Attention, high school graduates and those about to graduate who are now 18 and not over 26 years of age! Here is a grand opportunity to win the coveted U. S. Navy "Wings of Gold."

For the first time in its history, the Navy has opened the way for high school graduates to become flying officers.

If you desire to get into the fight for *your* country, flying the fastest, most powerful warplanes in the world, don't wait. Act now! There is an opportunity for immediate flight training for those able to pass a physical examination and a reasonable mental test.

Apply in person at the Naval Aviation Cadet Selection Board, Ferry Building, San Francisco, to learn what is offered by Naval Aviation. If it is impossible to apply to the board, call at your nearest Navy Recruiting Station.

Exhaust Turbocharger

For Marine Diesel Engines

ELLIOTT-BUCHI turbocharger is used in conjunction with the Buchi system of turbocharging four-cycle diesel engines. This method of supercharging has been in general use throughout the world for a number of years, and is now widely accepted in the United States, particularly for marine applications. The combined output of engines utilizing this system exceeds 2,000,000 bhp, covering a range of individual engine ratings from 150 to 6000 bhp.

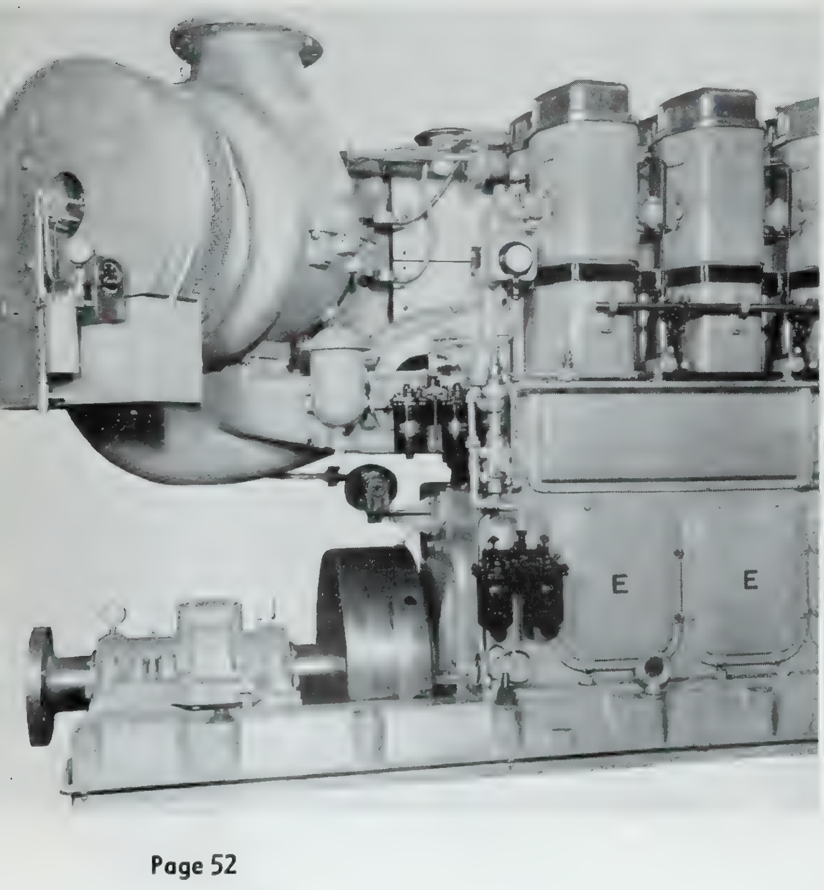
The turbocharger unit is entirely self-contained, and is connected to the engine only through the exhaust gas and air intake manifolds. It consists of a gas turbine, which is driven by the gas exhausted from the power cylinders of the diesel engine; the centrifugal blower, mounted on a common shaft with the turbine, supplies all the air required by the engine, under pressure, through the conventional air intake manifold. The exhaust gas turbine utilizes a part of the energy in the exhaust gas, which is otherwise wasted, without demand on the power developed by the engine.

The Buchi System

The low-pressure air delivered by the turbocharger serves two purposes. First, it blows through the combustion space and valves, thus scavenging the residual gases otherwise left at the end of the exhaust stroke, and replaces these hot gases with cooler fresh air. Second, it results in an air charge of higher density at the end of the suction stroke. The combined effect permits the combustion of a greater quantity of fuel without harmful effects to the engine, and consequently a higher output than with a normally aspirated engine of the same displacement.

The initial high pressure of the gas leaving each cylinder at the beginning of the exhaust stroke is transformed effectively into kinetic energy by proper proportioning of the exhaust manifolds and turbine nozzles. This energy is used to drive the turbine. After the initial surge of the exhaust gas from a cylinder, the pressure in the exhaust manifold drops nearly to atmospheric, while the air pressure from the blower remains considerably higher. The inlet valve is then opened for a period before the exhaust valve closes, allowing fresh compressed air to blow through, thus scavenging the clearance space, cooling the cylinder wall, piston, and valves, and mixing cool air with the hot exhaust gases in the manifold. After the exhaust valve closes, the inlet valve remains open to about the beginning of the compression stroke, when the cylinder is filled with relatively cool fresh air under pressure.

Timing of opening and closing of valves, and dimensions and combinations of exhaust manifolds to the turbine are selected so that timed pressure waves are created in the exhaust manifolds. These permit scavenging even though the pressure of the air delivered from the blower is lower than the peaks of the exhaust pressure waves. Adequate scavenging is as important as the pressure charging in the cylinder before compression. In order to prevent overlapping of the exhaust pressure waves, and to prevent blowing of exhaust gas from other cylinders during the scavenging period of a given cylinder, separate manifolds from groups of either two or three cylinders are connected to separate banks of nozzles in the turbine.



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ELLIOTT-BUCHI supercharge unit as applied to an Enterprise marine diesel engine, view from after end intake side.

Application of System

In applying the Buchi turbocharging system, several basic design principles are followed by the engine manufacturer in order to accomplish best results. These principles are well established from many years of research and operating experience. Among the most important relating to the engine itself are the following:

1. Proper valve timing to facilitate scavenging, allowing a wide overlap of exhaust and intake valve openings.

2. Provide area in cylinder head passages, valves, and combustion space, to result in minimum pressure drop during scavenging flow, when the piston is near top dead center, and both intake and exhaust valves are open.

3. Give careful attention to the combustion problem, to assure that the increased quantity of fuel is burned properly. In general, the open type combustion chamber with central injection has given the best results with the Buchi system.

4. Design the exhaust manifolds with proper size and combinations of cylinders in each specific case, to result in proper gas velocities, and to control the magnitude and sequence of pressure fluctuations. Exhaust manifolds should be as straight and short as possible, with sharp bends avoided, in order to utilize the exhaust gas energy most efficiently. Adequate expansion joints and insulation must be provided.

Numerous types and sizes of engines of conventional design have been turbocharged with relatively few internal design changes, and with increases in output amounting to 40 to 50 per cent over the normal continuous unsupercharged rating. The practical increase in rating will vary somewhat with different makes and types of engine, depending on the original design, unsupercharged rating, and service conditions. However, continuous turbocharged ratings of 115 to 130 lbs. per sq. in. in B.M.E.P. have been obtained successfully with engines not originally designed or built for turbocharging.

Higher outputs are being produced with engines designed or particularly well suited for turbocharging, where the turbocharger and its connected system can be considered an integral part of the complete engine. For instance, turbocharged operation is

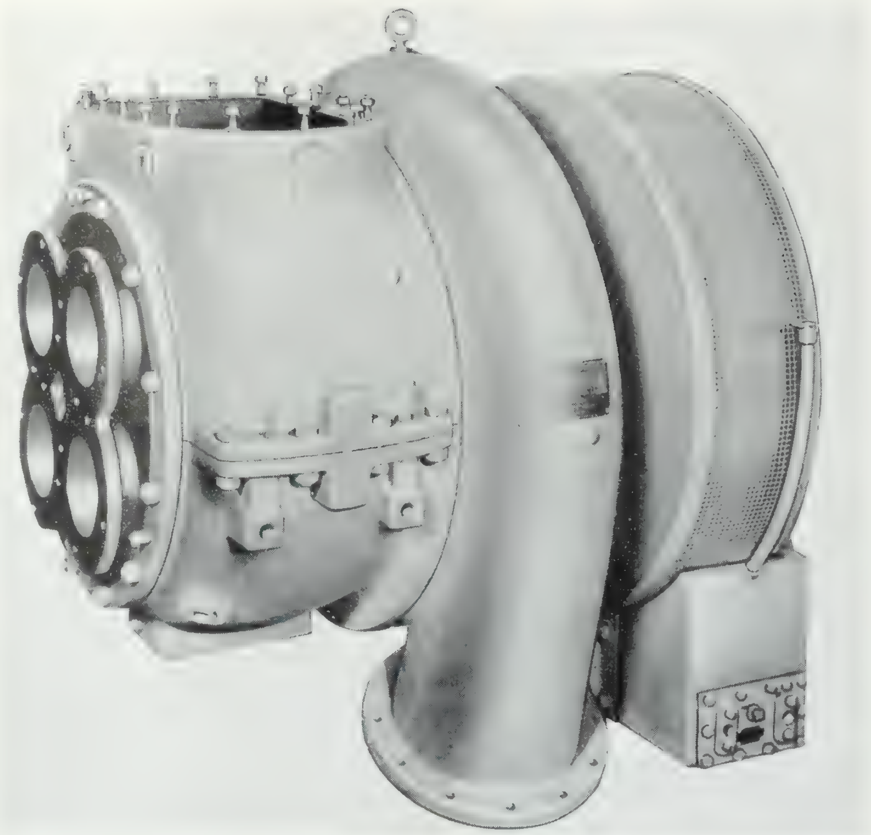
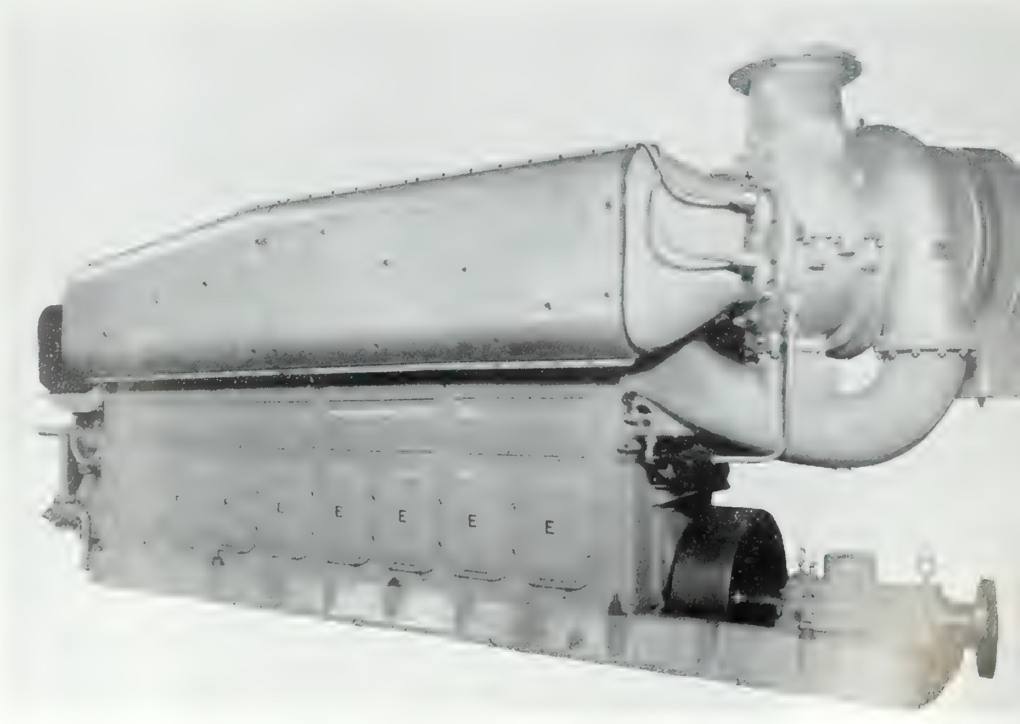


FIG. 1. CLOSE-UP OF AN ELLIOTT-BUCHI exhaust gas turbine supercharge unit for diesel engines.

EXHAUST SIDE OF ENTERPRISE marine diesel engine with Elliott-Buchi supercharger attached.



greatly improved by use of two inlet and two exhaust valves per cylinder, instead of single valves, as the greater areas possible result in increased scavenging air flow for a given pressure differential.

Engine Characteristics

The cumulative effect of these various design considerations results in the turbocharged engine having several distinct characteristics, the most important of which are as follows:

1. Increased output with an engine of a given displacement and speed, or, conversely, a smaller and lighter engine for a given output.

2. Fuel consumption per bhp per hour is decreased with the turbocharged engine. Fuel is less at all loads with the Buchi system of turbocharging than with other supercharging methods.

3. Operation of the turbocharger is fully automatic at all loads, and no controls are required. Speed, charging pressure, and air quantity, follow engine load changes practically instantaneously, due to the low inertia of the rotor. Tests have shown that a turbocharged engine can be brought up to full speed and carrying full load in about five seconds after it begins to fire. Other tests have shown that full load can be applied from a no-load, full-speed condition, and the turbocharger adjusted to load conditions in less than two seconds from the time the load is applied. The engine starts easily and quickly under cold starting conditions, and during start-up, the turbocharger is accelerated by the starting air before the engine fires.

4. The turbochargers have no mechanical drive from the engine, being connected to it only through the air and exhaust gas manifolds. No chains, belts, or gears are required.

5. The turbocharged engine is ideally suited for direct-reversing marine application, since the turbocharger always rotates in the same direction regardless of engine rotation. As the turbocharger rotates from one to two minutes after shutdown of the engine, it may rotate continuously during maneuvering.

6. Exhaust pulsations are considerably dampened in passing through the turbine. Exhaust mufflers for the turbocharged engine can therefore be simpler than for an unsupercharged engine. For marine application, it is generally considered entirely satisfactory to use a simple form of combination spark arrester and muffler.

7. Relatively less heat is absorbed in the engine jacket cooling water than for the unsupercharged engine, since a greater percentage of heat is absorbed by the scavenging air and goes into the exhaust gas, some of which is usefully employed in the turbine. Therefore, heat exchangers can be smaller for a given rating than for the unsupercharged engine.

8. Experience has proven that the turbocharged engine is equally as reliable as the unsupercharged engine, and that no additional operating difficulties or maintenance costs are involved. Pistons, cylinder heads, and particularly exhaust valves, are often found to be in relatively better condition, due to efficient scavenging.

The Turbocharger Unit

Several basic sizes of Elliott-Buchi turbochargers are available for engine ratings above 250 bhp. Each size is adaptable to a range of engine ratings by variation in dimensions of a few internal parts. The design is also flexible in permitting different mounting and piping arrangements for various makes of engines and numbers of cylinders.

The design and manufacture of the turbocharger are, according to the most advanced practices, incorporating materials best suited to the operating requirements. All parts are standardized and made to close tolerances, with wearing parts interchangeable.

Figure 1 is a shop view of a completely assembled turbocharger unit. The turbine casing is an alloyed iron casting, water-jacketed to eliminate the need for lagging and to minimize heat transmission to the blower end of the unit. The turbine inlet is a steel casting, and may contain either two, three or four openings, depending on the number of engine cylinders. These openings are attached directly to the engine exhaust manifolds through expansion joints. The exhaust gas is conducted from the inlet openings through suitably shaped channels to the nozzle ring, which is attached directly to the internal end of the inlet piece. The blower casing is made of high-grade cast iron, and carries the cantilever type bearing support which supports the rotor.

The turbine disk and blades are completely machined from a high-strength, heat-resisting alloy. The impeller is an aluminum casting of the

(Page 75, please)

PERFORMANCE OF THIS TUG, one of the Foss fleet operating out of Tacoma, Washington, is greatly improved by the supercharger on her Enterprise diesel.

A Suit

Designed To Save Life

The Morner Life-Saving Suit is bringing fresh confidence to all who go down to the sea in ships in these perilous times.

Buoyant, comfortable, made in a single piece from the heavy built-in boots to the yellow rubber hood which fits closely over the head, the Morner Suit has been approved by the United States Bureau of Marine Inspection and Navigation, as well as by the governments of Norway, Sweden, and Denmark.

More than 15,000 of these suits are in use. The suit is regular equipment for the 4000 seamen of the Standard Oil Company of New Jersey. Other American fleets using this equipment include the United States Navy, the United States Coast Guard, Lykes Bros. Steamship Company, Inc., Waterman Steamship Corporation, United Fruit Company, the Robin Line, the Gulf Oil Corporation, McCormick Steamship Co., Seas Shipping Company, Inc., and Swedish-American Line.

Life-saving suits are now mandatory on American vessels. The new regulations read:

"*Life-Saving Suits.* Ocean and coastwise cargo and tank vessels of over 1000 gross tons shall be provided with one approved life-saving suit for each person on board."

The Morner Suit is simply a one-piece, molded, flexible suit of rubber, manufactured in the United States by the United States Rubber Company. The hood and gloves are yellow in order to enable rescuers to see them at a far distance. Inside each suit is a built-in but detachable kapok vest which provides the necessary buoyancy for supporting the wearer shoulder-high in the water . . . even though he should be unconscious.

The Morner Suit fits the body loosely, since buoyancy is not the result of inflation. Hence, the natural laws of insulation and heat conservation apply, keeping the wearer warm even in water of freezing temperatures. The air space between body and rubber is warmed by body heat as though the seafarer were under a blanket ashore.

Located high on the chest are watertight pockets for food, cigarettes, valuables, etc. Comfort and peace of mind were taken into consideration when Count H. G. Morner, of Stockholm, Sweden, outstanding authority on life-saving equipment, invented the suit.

UPPER RIGHT: A 30-FOOT JUMP from ship's deck in a Morner Suit.

LEFT: MORNER LIFE-SAVING floats with shoulders well out of water, keeping occupant warm and dry.

To put the suit on, less than a minute is needed. The wearer slips his arms, feet and legs inside, draws the upper part over body and head, locks the opening shut from crotch to chin, and is ready to go over the side. The patented watertight slide fastener closes the front of the suit in a single motion. This fastener is composed of two pieces of strong rubber—one piece channeled and the other grooved. They are joined by a sliding metal part which forces the tongue into the groove. With the tongued part slightly larger than the edge of the groove, no water can enter.

Scandinavian insurance rates are reduced 10 per cent if Morner Life-Saving Suits are part of a ship's equipment.

Pacific Coast offices of the Watertight Slide Fastener Corp. are at 311 California St., San Francisco. A. B. Owesen, of Owesen & Co., located in San Francisco and San Pedro, also Captain Fritzner, Colman Bldg., Seattle, represent the firm on the Pacific Coast.

News FROM THE PACIFIC SOUTHWEST

by K. M. Walker

JOHN W. BARNETT
Newly appointed assistant to the executive vice president of the Los Angeles Shipbuilding and Dry Dock Corp.

L. A. S. B. & D. D. Corp. Gets Assistant Executive

John W. Barnett was recently appointed as assistant executive vice president of the Los Angeles Shipbuilding & Dry Dock Corporation.

Mr. Barnett has had a spectacular and successful career as an industrial executive. Born in Texas, he graduated from Annapolis in 1908, and four years later resigned his commission to take up livestock farming near Lexington, Kentucky. During World War I, he was operating manager of the Lake Torpedo Boat Co., Bridgeport, Conn.

After the shipbuilding boom faded, he represented private shipbuilding firms in connection with settlement of Government contracts. For some years, he operated his own combustion engineering firm with headquarters at Washington, D. C. In 1930 he was appointed Director of Construction and Finance of the U. S. Shipping Board.

In 1935 Barnett organized the Procurement Division of W.P.A. and about January 1, 1936, he joined Babcock & Wilcox as assistant general manager of their Marine Department. From this last position, he comes to L. A. S. B. & D. D. Corporation.

With this broad experience, Mr. Barnett should be of great value to the Los Angeles shipbuilding firm.

New Commercial Agent in Los Angeles District

Joseph W. Vanderlaan has been transferred from the Cleveland District Office of the U. S. Department of Commerce to the Los Angeles District Office as commercial agent, taking the place of Alvin C. Eichholz, who has resigned to accept a position with the Los Angeles Chamber of Commerce. Mr. Vanderlaan is a career employee of the Department, with a service record of 24 years; at The Hague, Netherlands; in the East Indies; at Minneapolis; and at Cleveland. His long experience will enable Mr. Vanderlaan to render valuable service to the exporters and importers of Los Angeles.

First Launching By Lynch

The first vessel to be constructed by the **Lynch Shipbuilding Company,** since taking over the plant of the Martinolich Shipbuilding Company at San Diego, was launched on the top of the tide at 10:00 P.M. May 15. This was a 400-ton wooden, flat barge, built to the order of Shanahan Brothers of Los Angeles. The barge length overall is 90 feet, beam 34 feet, and it is built with a square flat stern, raked scow type bow, and flat deck. It will be used to transport materials for Government construction projects on San Diego Bay. This was the only new vessel launched in San Diego during the month ending May 20.

This company has been awarded a $1,000,000 contract for several wooden mine sweepers by the Navy, and the keel for the first of these vessels is scheduled to be laid early in June. Additional ground is required by the shipyard to facilitate construction, and the City Harbor Commission has approved a 200-foot addition to the tideland lease held by the shipbuilding company.

In addition to the several conversion jobs under way for the Navy, the Lynch yard is preparing to resume work on the completion of the big wooden tuna clipper "Conte Grande," which has been delayed due to priorities on the machinery. This has now been settled, and the vessel will be equipped with a six-cylinder, 690 hp Fairbanks-Morse diesel engine. It is planned to have her ready for service in sixty days.

Maritime Commission Asking Bids

San Diego boat building plants have been asked by the Maritime Commission to submit bids on a fleet of 180-foot wooden barges of 750 tons capacity.

The Commission is also requesting bids for 18 concrete oil tank barges, 360 feet between perpendiculars and similar in design to the five tank barges now under construction by the **Concrete Ship Constructors** at National City, California. It is expected that this concern will be the only bidder in the San Diego Harbor area. Two other yards, one at Savannah, Georgia, and one on the Gulf near Galveston, Texas, are building concrete ships.

Shipbuilding Area Develops

The portion of the San Diego industrial area set aside by the Harbor Commission for shipbuilding has been developing rapidly in recent months. The first yard to locate in this area, near the foot of 28th Street, was the Warren yard, now the **Lynch Ship Building Company.** Then the **Hollinger & Millican** yard was established, and is now completing the tuna clipper Sunset. This was followed by the **Harbor Boat Works,** which was forced to move its boatbuilding and repair yard from the Harbor Drive location, at the north end of the bay, to allow construction of the new bay front highway skirting the shore from the Civic Center to Point Loma.

Next to move into the new area was the **Robbins Marine Engine Works,** who were also forced out of the Harbor Drive area, and who have set up their repair ways and machine shop adjoining the Harbor Boat Works. The latest tenant of the shipbuilding area is Emil Stark with his **General Marine Works** on a tide land lease, approved by the Harbor Commission. Stark was also forced out of his old location on Harbor Drive at the foot of Juniper Street to make way for the new highway.

This now groups five of San Diego's seven major boat works together in a shipbuilding area served by railroad spurs and easily accessible from the southern extension of the new Harbor Drive.

Cal-Pak Quits For Duration

With their fishing fleet reduced to one boat, and their normal payroll of 300 reduced to eight, the **California Packing Corporation** has decided to abandon operation of their plant at the foot of Juniper Street, San Diego, until after the war, according to Donald T. Saxby, of San Francisco, in charge of fishing operations.

When peace is restored and machinery prices return to normal, the California Packing Company plans to construct a $750,000 tuna-packing plant near the foot of 28th Street. Meanwhile, the **Solar Aircraft Company** has taken over their lease on tidelands at the foot of Juniper Street, with Cal-Pak retaining only sufficient warehouse space to store canning machinery and equipment. Plans and specifications are complete for the new 28th Street plant of the California Packing Corp., and a 25-year lease obtained on the south side tidelands with an option for a 25-year extension.

LOIS JONES, "MISS FOREIGN TRADE," sponsor, enthusiastically smashes the bottle of champagne on the bow of the F. A. C. Muhlenberg on May 13, sending Calship's twenty-seventh cargo vessel constructed for the Maritime Commission, down the ways. The Matron of Honor, Mrs. Max Linder, is smiling her approval in the background.

Bar Pilot Returns To Sea

Capt. Andrew J. Shrader, San Diego bar pilot for the past two years, has resigned his position to take command of a deep-water vessel. For a number of years, prior to coming to San Diego, Capt. Shrader was coast pilot for Norton, Lilly & Company, with headquarters at San Francisco.

Capt. H. C. Johnson, senior port pilot, advises that no successor has been selected for Capt. Shrader's place. It is not likely that one will be chosen for the present, due to war shipping conditions, but it is hoped that Capt. Shrader may be welcomed back to the port when normal ship movements are resumed. Capt. Shrader succeeded Capt. Henry J. Meriwether, who retired in 1940.

Concrete Shipyard Working Full Time

The big **Concrete Ship Constructors'** plant at National City is humming with activity and now is working around the clock, although handicapped by the difficulty in getting experienced welders and steel workers to set the complicated network of steel reinforcing bars.

The two building basins, similar to a graving dock, are now both in use with the forms for a 360-foot oil tank barge set up in each, and reinforcing steel going into place in both basins. The 7/8″ round iron reinforcing bars, forming the longitudinals in the bottom, decks and part way up each side and up each bulkhead, are electric welded to form one piece from stem to stern. These are welded on a flash welder set up on the embankment and worked into the ship as each butt is welded. These bars are closely pitched, about 3½″ centers, in two layers placed one on each side of 1¼″ transverse bars and staggered to form a close mat of reinforcing steel. The 1¼″ square transverse bars are also closely spaced and the intersections of the round longitudinals and square transverses are systematically arc welded to create a rigid framework. The sides of the hull, or shell, will be 4½″ thick of a dense mixture of light aggregate, sand and cement. Bulkheads, fore and aft centerline and transverse, will be of concrete, and the entire vessel, including deck house, poop and forecastle, will be a monolithic structure.

News FROM THE PACIFIC NORTHWEST

by Daniel L. Pratt

Large Orders For New Ships

Orders for new war vessels of both steel and wood continue to pour into yards in the Pacific Northwest. Largest of these since our last issue was another contract given to the **Oregon Shipbuilding Corp.** of Portland for forty-two more Liberty freighters, making a total of 173 ships of this type ordered from this one yard alone. Across the Columbia River the Kaiser interests were, the middle of May, under production in their new Vancouver yard on another contract for 117 Liberties and work was being rushed on the new plant to build steel tankers on Swan Island.

Wooden Ships For Sound Yards

Meantime, new orders for wooden ships have been placed with some of the Sound yards, most important of these at Bellingham. **The Bellingham Marine Railway & Boatbuilding Co.** has been notified that it has been awarded four additional 135-foot wooden mine sweepers, which brings the number of ships under contract at the yards to 18—sixteen minesweepers and two salvage vessels, a total of over $8,000,000.

The Northwest Shipbuilding Co. at South Bellingham has been awarded two more of these boats, a contract of about $650,000, bringing the total business awarded this Commercial Point yard to approximately $900,000. This yard's initial order was for six naval barges to cost about $250,000.

Oregon Yard Launches 35th Ship

On May 11th, the **Oregon Shipbuilding Co.** of Portland launched its 35th Liberty ship, the Walt Whitman, and, at the present rate of schedule, by the time this appears in print, should have at least forty hulls in the water.

AT OREGON SHIPBUILDING CORPORATION, Portland, on April 27 the sponsor's party at the launching of the Samuel Moody included Mrs. A. F. Peabody, matron of honor; Mrs. Clyde Nelson, sponsor; Mrs. James Crider, matron of honor; Dr. Alfred Lockwood, who delivered the invocation. On this occasion, the yard received a "Flag of Merit" from the U. S. Maritime Commission.

Two Destroyers Are Launched

Two more destroyers were launched during the early part of May from the yards of the **Seattle-Tacoma Shipbuilding Corp. No. 2** at Seattle, bringing to five the number of hulls that this big plant has placed in the water this spring. In order of launching, these are: the Carmick, March 8; the Doyle, March 17; the Endicott, April 5; the McCook, May 5, and the Frankford, May 16.

The McCook was christened in honor of Commander Roderick Sheldon Cook, Civil War veteran. Twenty-three years ago, another destroyer was launched and named the McCook. This ship was to have been sponsored by Mrs. Reed Knox of Bryn Mawr, granddaughter of the Commander, but she was unable to attend the launching. This time, however, she made it, and acted as the sponsor for the second ship named after her grandfather. The first McCook, with her name changed, is among the fifty destroyers given to England.

The Frankford was sponsored by Mrs. William Francisco Gibbs, wife of the senior member of the well-known firm of Gibbs & Cox, naval architects. The Frankford was named after Capt. John Frankford, who commanded the privateer Belvedere out of Philadelphia in the Revolutionary War.

The other vessels to follow soon from the ways of this yard will be the Farley, Franks, Haggard, Hailey, Johnson and Laws.

Escort Air Carrier Launched

No time was wasted when the new escort aircraft carrier Core was launched from the Seattle-Tacoma plant No. 1 at Tacoma on May 15. The giant vessel had hardly taken the water before the keel plate for another vessel of the same type was lowered into place. The Core was christened by Mrs. B. B. Smith, wife of Lieut. Commander Smith, in command of the naval air base at Pasco. She is the fifth of a long series of her type being built at the Tacoma yard. Most of the officers at the naval reserve air base at Sand Point attended the launching in honor of the sponsor and her husband.

Seaplane Tender Hits Water at Houghton

Two hours before the Core was christened at Seattle, another important launching took place at the **Lake Washington Shipyards** across the lake from the city. This was the Coos Bay, first of a fleet of three seaplane tenders under contract at that yard. The Coos Bay was christened by Mrs. L. R. Gehres, wife of Commander Gehres, Chief of Staff for Air in the Thirteenth Naval District. Chester Clark, deputy collector of customs in Marshfield, Ore., took part in the ceremonies in recognition of the fact that the seaplane tender was being named after Coos Bay. Eight vessels of this type have been launched during the past two years on Puget Sound. They are: Barnegat, Biscayne, Casco and Mackinac, built at the **Puget Sound Navy Yard;** Rockaway and San Pablo, built by the **Associated Shipbuilding Co.;** and the Absecon and Chincoteague by the **Lake Washington Shipyards.**

Triple Launching At Portland

In the first triple launching staged in Portland since the war began, the yard of the Albina Engine & Machine Works late in April launched three 165-foot steel sub-chasers within a period of one hour. The first craft, PC 578, was christened by Mrs. H. W. Erren, wife of the treasurer of the company, and slipped down the ways to the cheers of 2000 employees and their wives. Fifteen minutes later the PC 579 started down the ways. Mrs. S. N. Rovang, wife of the yard superintendent, christened her. Half an hour later the PC 580 took the water after being christened by Mrs. F. W. Steffen, wife of the superintendent of engine installations. The Albina yard holds a large contract for a type of subchasers which the Navy is using with excellent success against the U-boats. A number of naval officers, including Lieut. Com. W. E. Meagher, assistant supervisor of naval construction in the district, took part in the launching program.

Great Inland Naval Training Station

President Roosevelt has approved construction of a $30,000,000 naval training station (one of the largest in the country) on Lake Pend Orielle, near Spokane. The firm of Whitehouse & Price, architects, have been given the job of drafting the plans. It is understood that about 40 draftsmen will be needed and work will start immediately. This plant will cover about 600 acres and should almost measure up as a second Annapolis. Twenty thousand men will be accommodated and 600 officers. The base is expected to go into operation about August 1 and the Northern Pacific Railroad will build a spur, and the Highway Department, a new highway to the site.

Alaska Lines Form Conference

The Maritime Commission, late in April, authorized the **Alaska Transportation Co.,** the **Alaska Steamship** and the **Northland Transportation** companies to form a conference to establish uniform passenger and freight rates between the United States West Coast cities and Alaska. These rates are to be subject to the approval of the Commission. All three companies have headquarters in Seattle.

More Expansion at P. S. Navy Yard

Indicating further expansion of the plant of the already tremendous Puget Sound Navy Yard at Bremerton, across from Seattle, are plans announced from Washington, D. C., for the purchase of 52 parcels of land near the southwest junction to the yard. This will be the second condemnation in connection with Navy yard expansion in the past month.

U. S. Agent Appraises Ships

A. W. Young, special assistant in the United States War Shipping Administration, has been in Seattle recently appraising vessels of less than 1000 tons register that have been requisitioned by the Navy and Army. Approximately thirty vessels are involved.

Marine Shorts

The Port of Portland has discontinued operation of vessel towage service effective May 1, and towage service No. 12 has been suspended. The towboat Portland will be operated under lease by the Shaver Transportation Co., together with the company's other towboats. This company has contracted to supply adequate service for vessels engaged in maritime commerce and to serve the shipbuilding and repair industries in the Columbia River district.

The trend to removal of Naval air supply bases to farther inland locations for protection from coastal attack is indicated in the announcement of establishment of such depots at Pasco, in southeast Washington, and at Velox, in the Spokane district.

* * *

Commencement Bay, Tacoma, was a busy spot on the night of May 2 when four ships dropped into the water in the course of an hour. The launchings included two mine sweepers at the Martinac and Tacoma boat yards, and two steel tugs at the Birchfield Shipbuilding & Boiler Co. plant. The starter was at the Martinac plant, where Miss Carmen Hansen christened the mine sweeper YMS 127 at 7 o'clock. Thirty minutes later, Miss Marjorie White sponsored the YMS 132. At eight o'clock Mrs. Alvin T. Davies, wife of the president of the company, and Mrs. Preston Heif, wife of the plant superintendent, christened the tugs Port Ludlow and Port Blakely at the Birchfield plant. The latter plant has a contract to build six of these 100-foot steel tugs for the Maritime Commission.

* * *

At the plant of the Lake Union Drydock, Seattle, on May 5, Sylvia Oli[illegible] ten-year-old daughter of Frank Oliver, machine shop foreman, christened a new mine sweeper built on order of the British Government.

* * *

Arrived in Seattle last month was the old steam ferry Napa Valley, one of the last of a fleet of vessels purchased on San Francisco Bay for the Black Ball Line of Seattle. She is a 200-foot steamer with a speed of 15 knots, and it was considered likely that she would be placed on the Port Angeles-Victoria run in place of the steamer Sol Duc. She is rated to carry 1500 passengers and 78 to 80 cars, and will be renamed Malahat.

* * *

A contract has been let to the Gilpin Construction Co. for construction of a new outfitting pier and repair dock at the Commercial Iron Works, Portland, to increase facilities and take care of the new steamship orders. Cost of the dock was estimated at $460,000. Construction was under way in May on the structure, which is to be 1450 feet long, 100 feet wide.

* * *

H. C. Hanson, Seattle naval architect, announces that a contract has been let to the Sagstad shipyard at Ballard for four large rescue boats for the Army. A similar contract for three has been given to the Hillstrom Shipbuilding Co., at Marshfield, Ore. Cost of the seven boats will total about $840,000. He also announced the awarding of a contract for three 74-foot welded steel tugs to the Reliable Welding Co. of Tacoma.

* * *

Two 57-foot salmon purse-seine boats are now under construction at the Harold Hanson Boat Yard at Salmon Bay, Seattle, the Wonderland and the Polarland. Work has also been started on a 65-foot schooner for Peter Wold, well-known Alaska navigator and fisherman. The boat will be diesel-powered and will be placed on a route from Unalaska and Good News Bay, trading with the natives. Keel has also been laid for a 65-foot halibut schooner for Sverre Jangaard.

* * *

The U. S. Navy has decided and announced that districts, yards and stations may undertake urgent repairs and alterations to Canadian war vessels, where such work does not interfere or handicap important work of the American Navy. Such work may be accepted and carried on at the discretion of each district commandant.

* * *

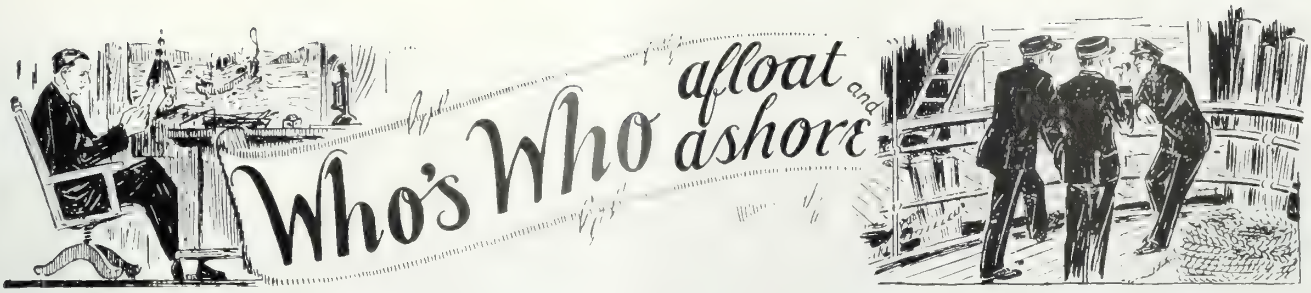
Marine Short-Shorts

Another 10,000-ton freighter, the Fort Stikine, was launched at a Canadian west coast port on April 16 and the yards of our allies to the north continue to make significant contributions to the growing Allied Nations fleet . . . Grays Harbor's new north jetty was to have been completed during the month of May and only the dressing up work remains to complete the job. The jetty is 8150 feet long . . . Manufacturing life rafts is being added to Portland's building activities by the building of a plant there by the Colvin-Slocum Boats, Inc. of Amesbury, Mass. The plant will start with an order for 250 from the Maritime Commission . . . Radio operators are needed by the Coast Guard for assignment to duty in the Puget Sound area under the command of the port detail . . . Anyone whose business or normal life takes him along the waterfront of Seattle and other Northwest ports should apply for a waterfront identification card at once, or he may get into trouble. Ample proof of American citizenship must be submitted and other requirements must be met which are fully explained at Coast Guard headquarters. The cards in Seattle are issued at Pier One . . . Liberty ships will be turned out in 60 days at the Oregon Shipbuilding Co., according to Tom Ray, secretary of the Boilermakers' and Iron Shipbuilders' Union. "We of labor say we can and will build these ships in 60 days," said Ray. "This is labor's answer to Admiral Land's plea for ships and more ships" . . . Converted to a modern cargo ship, the former submarine tender, and also one-time merchant vessel Saxonia was given her trial trip in May, and is ready for service. She was remodeled at the Lake Washington Shipyards at a cost of $500,000 and will be operated by the Orbis Navigation Co.

* * *

Personal Gleanings

With the departure of **Watson F. Barr,** Seattle, for service in the Navy as a reserve lieutenant commander, **R. W. Cabell** of Portland has been named Northwest manager of the Interocean Steamship Corp., retaining his offices in Portland. . . . **Paul H. McCelland,** widely known in transportation circles, has been appointed acting chief clerk of the United States Army Transport Service in Seattle. . . . **Bo's'n Neal Dollarhite** on October 24 signed on the American Mail freighter Collingsworth, and now he is back in Seattle, which he calls his home port, after witnessing the fall of Singapore and being in the hottest part of the Asiatic scrap. By the time this is in print, he will probably be "somewhere in the Pacific" again. . . . **Lieut. Commander Lystad,** who was master of the North Star during the vessel's cruises to South Polar regions, has recently assumed the duties as Navy routing officer in Portland, Ore. He was attached to the 13th Naval District, and at the beginning of the war held the rank of Lieut. Commander in the Naval Reserve. . . . **Capt. R. C. Brennan** of Portland, commander of the famous troopship Yale which ferried 265,000 soldiers across the Atlantic in World War I, has been assigned to one of the new Liberty ships. After relinquishing command of the Yale, Brennan spent a number of years with the Pacific Steamship, Oceanic Terminals, and other firms. It is interesting to note the present activities of a partial list of shipping men who were actively engaged along the waterfront when private shipping stopped and brought activities at the dock offices to a standstill—American-Hawaiian S.S. Co.: **H. L. McElhaney,** U. S. Engineer's office, priority div.; **Barney Jager,** Army Transport Service in San Francisco; **Mort Woodward,** Lieut. in Navy. McCormick S. S. Co.: **Hal R. Davis** and **Geo. Dorfner,** shipyard office; **Harry Wheeler,** Lieut. in Army Transport; **Ted Bursett,** Boeing Airplane Co.; **E. J. Clement,** Luckenbach S. S. Co., and **Phil Gruger,** Coastwise Line, in shipyard office. **Win Jones,** manager of Alaska Transportation Co., U. S. Navy. **Keith Middleton,** Border Line S. S. Co., **Walter Brennan,** Quaker Line, and **Capt. Froberg,** in the U. S. Navy. **Tom Green,** wharfinger, at Port Docks, Army quartermaster.



Who's Who afloat and ashore

Edited by Jerry E. Scanlon

Popular Operator A Benedict

One of Pacific's most colorful and popular figures, **George Williams,** assistant operating manager for Grace Line, whom **Vice President Fred L. Doelker** considers one of the best all-around marine men in the country, is now a married man.

Mrs. Williams is the former Helen Ring, member of a pioneer and socially prominent East Bay family.

Shy as a school boy reciting his first essay, George admitted he had headed for Reno, but finally changed his course with his bride-to-be and the couple were wedded in Carson City.

"Mr. Fixit" during the trip was **George Eggers,** life-long friend of the groom, who in business life is an executive of the Maritime Commission.

George Williams has been with the Grace Line interests here, and at about every other port they operate from, except New York, for more than thirty years. That he is one of the best informed men in the business on Latin-American trade and operation is universally conceded. His friends are legion in every port of the Pacific from British Columbia down the West Coast to Chile.

The couple are making their residence in Oakland.

GEORGE WILLIAMS
Assistant operating manager, Grace Line

Building the Fleet For Future Business

Steamship executives, while directing their energies to winning the war, are also keeping an "eye peeled" toward the post-war era. This is particularly true about the Moore-McCormack Company.

During the visit to the Pacific Coast of **Emmett J. McCormack** to San Francisco and other Pacific Coast ports, the New York shipping leader said his company's policy of continuing to purchase new vessels is for the future so that adequate tonnage will be immediately available to take up trade expansion with the Latin American republics, where it was left off before the war.

McCormack said his company's attention was especially concerned with the service out of the Pacific Coast to the East Coast of South America, maintained formerly by the Pacific Republic Line.

His visit here was to attend the launching of the Mormackhawk at the Consolidated Steel Company ways, Wilmington, Calif.

Eagle Emblem To a Tanker Crew

For "meritorious service in the conduct of duty" while in the Pacific combat area, **Captain Olaf Eckstrom** and his crew of a Union Oil Company tanker have the Maritime Commission's "Eagle" emblem of merit as an award.

The presentation was made to Captain Ekstrom and to the men of his ship by **Captain Edward Macauley,** West Coast representative of the Maritime Commission. The ceremonies were conducted during National Maritime Day at a luncheon in the Commercial Club, May 22.

In full glory, written in the war records of this country for men of future generations to read, is the heroic exploit of Captain Ekstrom and his valiant men, one of the outstanding services performed in the hundreds listed and the hundreds that will never be told, by the men of the American Merchant Marine.

For the duration, the exploit performed by the daring Union Oil Company skipper and his men during the early outbreak of the war, must of necessity remain untold.

CAPTAIN OLAF ECKSTROM

Union Oil tanker skipper receives for himself and crew the Eagle emblem.

●

H. N. BLACKMON

Medaled by Westinghouse for his record of service as manager of their editorial service.

Eight Get Medals From Westinghouse

George H. Bucher, president of the Westinghouse Electric and Manufacturing Company, presented the Westinghouse Order of Merit for distinguished service to eight employees at the East Pittsburgh works.

Voted by the company's board of directors, medals were awarded to **A. S. Wentworth, R. E. Marbury, A. H. Bakken, H. N. Blackmon, L. E. Schumacher, J. B. George, T. J. Schrimser** and **Edward Griffiths.**

Each of the eight received a bronze medal bearing his name, a silver "W" and the inscription, "Whom his fellow men delight to honor." Since its inception in 1935, the Westinghouse Order of Merit has been awarded to about 200 employees for outstanding contributions to electrical and mechanical arts and to their company's progress. Accompanying each medal is a citation describing the recipient's service.

A medal went to Mr. Wentworth, manager of the Printing and Publication Division, for "ability and unusual resourcefulness" in coordinating and modernizing Westinghouse printing operations.

As a section engineer in the Switchgear Division, Mr. Marbury holds a number of patents on electrical equipment, and was honored by the company for his "advanced engineering ideas" and contributions to apparatus design.

Mr. Bakken, who is a mechanical engineer in the Circuit Breaker Department, also won recognition for inventive ability in switchgear equipment, railway and other apparatus and for his "uncanny ability to anticipate in design the needs of a developing art."

In the field of editorial accomplishments, Mr. Blackmon was cited for his "outstanding ability to interpret Westinghouse engineering achievements to editors of technical and trade magazines and for his honesty of opinions and ability to teach editorial techniques and philosophy." He is manager of Editorial Service, which provides technical publications with articles pertaining to Westinghouse.

Mr. Schumacher, organizer of many employee activities and supervisor of the Visitors' Service Bureau at East Pittsburgh, received the award for his "ability to sense and stimulate the interest of employees in group activities"; and his "genial and friendly discharge of duties" in the Visitors Bureau.

An architect in the Factory Service Division, Mr. George received the award in recognition of his technical ability and supervision in the erection of superior factory structures and also for services as a consultant.

Mr. Schrimser is superintendent of the Benolite Company at Manor, Pa., which is a subsidiary of Westinghouse engaged in the manufacture of varnish. He was honored at the Benolite Works, following the luncheon ceremony, for his contributions toward the "development of high grade insulating varnishes," for able management and "for noteworthy achievements in varnish chemistry."

Contributions to manufacturing methods and ability to inspire and guide others brought Mr. Griffiths, director of time study and methods, into the select group of Merit award winners.

For the Duration

Emmett Hayden, Jr., son of the well-known former San Francisco supervisor, who has been with the American President Lines, and before this with the Dollar Steamship Company for the last twelve years, is now on leave as Lieutenant, U. S. N.

Succeeding **Watson S. Barr,** Seattle, who has entered the Navy with the rank of Lieutenant Commander, **R. W. Cabell,** formerly in charge of the Portland office, has been named Northwest manager of the Interocean Steamship Corporation, it was announced by **Erik Krag,** vice president. During the emergency the Portland office's affairs will be handled by Mrs. Cathryn Damon.

Men of the sea are not affected by the sugar rationing. California's Rationing Administrator, **Paul B. D'Orr,** has just ruled that the limitation does not apply to ships since there is no provision covering sales for ships' stores.

John Wagner, booking agent for the American President Lines, is now a Major, U. S. A., with the Quartermaster Corps. His brother, **Randolph Wagner,** is a Lieutenant in the Army.

Joseph "Joe" Friedlander of the American Trading Company has won his epaulets as a captain in the air corps.

John "Jack" Kelly, for years with the McCormick Steamship Company, and more recently with the Madrigal Line, is now Lieutenant Kelly, USN.

Ralph Boone, for the last twelve years connected with the Grace Line, is now Lieutenant Boone, USA.

Kenneth H. Finnesey, former traffic manager of the Knutsen Line and prior to that with the Robert Dollar, Java Pacific and Interocean Steamship Corporation, is now captain in the U. S. Army.

Albert W. Gatov, formerly with the Pacific Steamship Company, stationed in Los Angeles and one-time operating manager for the Interocean, and **William B. Lockwood,** formerly purser for the Alaska Steamship Company, are now captain and lieutenant, respectively, with the Army Transport Service, Fort Mason.

Sales Manager Recovers

Completely recovered from injuries that might have been fatal but for a pile of crates which broke his fall when he stumbled down a hatch during inspection, **Frank H. DePue,** sales manager for the Moore Dry Dock Company, is back on the job.

However, his boss, **Joseph Moore, Sr.,** admonished his popular "outside man" to take things easy. But there is little likelihood the order will be obeyed, as Frank DePue is one of the busiest executives about the Bay yards.

Two fractured ribs were sustained by Frank when he fell. Luckily, his fall was broken by a pile of wooden crates on the new ship which he was inspecting. Doctors said this break in his plunge, no doubt, was a cushion against almost certain fatal injuries when he struck the lower deck.

Maritime Exhibit At Marine Exchange

The exhibit featured by the Marine Exchange during Maritime Week to create interests in Maritime Day, May 22, was one of the best ever arranged for this anniversary.

M. A. Cremer, manager of the Marine Exchange, was responsible for the showing. One exhibit of unusual interest was the prefabrication display, showing the application of mass production principle to shipbuilding.

Models demonstrated how sections of a ship's hull are constructed in special shops or on welding platforms, and then erected in place on the ways.

The miniature shipyard created much interest.

Modern Gold Rush

Reminiscent somewhat of the Days of '49 in California, was the report by **I. F. Wixon,** district director of United States Immigration in San Francisco, revealing that, lured by high wages, more than 126 sailors from foreign ships had deserted their vessels during April to work shore-side.

Gold in the hills was the Mecca in sailing ship days.

Of this recent number, 75 were rounded up. This condition, immigration records reveal, has been prevalent throughout United States ports where checkups reveal that ships of all nations permitted to enter port have reported crew men missing.

Many of these deserters hastened far into the interior and took jobs at high wages as skilled mechanics in defense plants. The Government is making a nation-wide clean-up and sending these illegal immigrants back to their ships.

FRANK DE PUE
Sales manager, Moore Dry Dock Co.

Appeal For Navy Relief

For the first time in the 144 years that the Navy Relief Society has been functioning an appeal is being made to the public. Prior to Pearl Harbor, the commissioned and enlisted personnel sustained the fund devoted to families and dependents of Navy, Marines and Coast Guardsmen killed or injured. Standard Oil of California has raised $15,000 as their contribution to this appeal.

A national campaign for $5,000,000 is the goal.

Memorial Award To Sumner Wells

The **Captain Robert Dollar Memorial Award** of 1942 for distinguished contribution to the advancement of American foreign trade was awarded to Sumner Wells, Undersecretary of State.

Curt G. Pfeiffer, chairman of the Award Selection, made the presentation in New York in connection with the observance of National Foreign Trade Week, at the World Trade dinner of the Twenty-ninth National Foreign Trade Convention.

WSA Services Shift to Gulf

Following recommendation of the War Shipping Administration, steamship services operating out of New York to South American ports have arranged for shifting some of their operations to Gulf ports.

Grace Line has assigned ships to this service. **Fred M. Rohrer,** who has been assistant to **R. Ranney Adams,** executive vice president, is now located in New Orleans in charge of operations. Rohrer is formerly from San Francisco, where he served under Fred L. Doelker as assistant Pacific Coast manager, until three years ago when he was called to New York by the late **Daulton Mann.**

Under the new set-up, New Orleans is the principal Gulf port. Not alone New York but other North Atlantic American ports are affected as lines with headquarters in other cities in this range have transferred to the Gulf.

It was announced, but not confirmed at press time, the New York and Puerto Line was shifting from New York to New Orleans.

The saving of time at sea in the South American run, accomplished by a quicker turn around, is cited as the factor in the shift. The convoy problem is also reduced because of the shorter voyage.

Navy "E" For Boiler Builders

Mighty proud of the Foster Wheeler Corporation these days is **Robert D. "Bob" Spear,** Pacific Coast representative. The Navy "E" was awarded this firm for its excellence of operations at its Carteret, N. J., plant.

"Bob" gave us a little history outlining that Foster Wheeler Corp. has supplied vital equipment to the U. S. Navy for more than half a century.

In 1891 the Foster Wheeler interests built main condensers for the armored cruiser New York, flagship of Admiral Sampson in the Spanish American War. Of more recent achievement was the company's valuable contribution to the equipment that helps power the U. S. S. Washington and North Carolina, two of the mightiest fighting ships afloat.

All who attended the national convention of the Propeller Club of the United States last October in San Francisco, will remember smiling "Bob," who was chairman of entertainment, a feature that contributed so much to the success of the marine caucus.

Freight Man in New Post

Thomas G. Reardon is now the general freight agent for the Dyson Shipping Company in San Francisco. He has just been named to the post by H. H. Van Duyne, vice president. The latter visited the Pacific Coast and while here offered Mr. Reardon the post.

Tom, as he is best known, is not entering a concern where he is unknown. In fact, he was with the Dyson interests in New York for four years, having joined them back in 1923.

He is best known on the West Coast for his long association with the Grace Line as their foreign freight head. In 1927 he came out on one of the Dyson vessels. He liked San Francisco. So he looked around. Grace gave him a job.

Chief Steward Visits Old Haunts

Max Burian, familiar figure on the old Pacific Mail transpacific liners during the heydey of the post-war Shipping Board period, has been in San Francisco for the last month from the Grace Line headquarters, New York. Burian has been with Grace Line, New York, since 1934.

Burian was one of the chief stewards who made American ship travel for Americans popular in the Pacific Ocean trade with the 535 and 502 type liners which resulted within a two-year period of relegating travel on Japanese liners to a poor second position.

He served during the era when the names of **William Holliday, George Holland, Jack Rooney, Ernest Grueber, Tommy Mills, Jim Saeger, Jock Robinson, George McCormack, Al Evans, Harry Moore, Tom Dowden, "Bill Aashman, George Wiley, Joe Carlton, Jack,** and his brother, **Joe Presser,** ruled as heads of the cuisine departments of the famed liners that maintained regular service out of this port in Pacific trades.

THOMAS G. REARDON

A Popular Freight Agent

Knowing that the name of genial **Jerry Hampton** is certain to be mentioned in ports of the world when yarns are being told afloat and ashore, we report that Jerry is district freight agent for the American President Lines.

JERRY HAMPTON

With the most varied marine career imaginable, since he started some 28 years ago with the U. S. Transport Service, it is safe to state that Jerry Hampton could not walk 100 steps along the bund of any seaport along the Pacific without being hailed.

He has served afloat with such companies as the old China Mail, as freight clerk and purser on the S. S. China, S. S. Nanking and the S. S. Nile with such notable skippers as **Captain John Kinley,** who was later a Shanghai pilot; **Captain J. C. Lancaster, Captain Joe Tipp, Captain J. H. Dobson** and **Captain S. M. Wise.** This was during the time **A. M. Garland** was general manager, and **Herbert N. Thomas,** now with Matson Navigation Company, directed the passenger activities.

Still later Jerry was with the Grace Line, then with the Robert Dollar Company, staying on when American President Lines took over, where he continues as district freight agent.

Few steamship executives are held in higher regard as to ability and good fellowship than Jerry Hampton.

Switches and Promotions

Captain John "Jack" White is Weyerhaeuser's new port captain. The popular skipper, long in U. S. Transport Service, is now in charge of ship operations on the Pacific Coast.

Allan Bissell, known to travelers on the Pacific for the last two decades, when he served on the H. F. Alexander, and later the President Madison, until the latter was sold, is now Port Steward.

Ben Fitch, manager of the Universal Transcontinental Corporation, a division of the United States Freight Company, announced change of the headquarters from 850 Third Street to larger quarters at 420 Market Street, San Francisco.

Stanley T. Olafson is the new manager of the Los Angeles Chamber of Commerce's Harbor Foreign Commerce and Shipping Department. He succeeded Clarence H. Matson, under whom he served for fifteen years.

Olafson had been handling Matson's duties ever since the latter was taken sick. Matson is now sufficiently recovered to serve in the capacity of counselor for the Chamber's foreign market development program.

Karl Frederick Melberg was named engine cadet on the West Modus, replacing **Mark K. Campbell,** who was ordered to report to Commander Malcom E. Crossman, District Merchant Marine Cadet Training Instructor of the U. S. Coast Guard, for assignment. **James R. Stirling** was appointed deck cadet on the West Modus.

Dean James Clair, graduate of the California State schoolship, has been appointed engine cadet on the cargo carrier West Celeron.

Gordon C. George, who was graduated from the California Training Ship California State and assigned engineering cadet on the freighter Flying Cloud, has been appointed Third Assistant of the West Celeron.

Conservative management, even in these troubled times, is helping steamship lines to reduce their indebtedness. This is well exemplified in the report of **W. H. Cloverdale,** president of the American Export Lines.

The President's statement said that the company's mortgage debt of $2,051,250, as of December 31, 1941, has been completely liquidated. This debt previously amounted to $9,891,600.

The many Pacific Coast shipping friends of **Lieut.-Colonel Thomas J. Weed,** superintendent of the Army Transport Service, Seattle, learned with pleasure his advancement to a full Colonel. **Captain John A. Barthrop** is Colonel Weed's assistant.

Necrology

Two Experts Killed in Crash

Two well-known executives of the Sperry Gyroscope Co. were killed when the United Air Lines passenger plane crashed into a mountain near Salt Lake City recently.

Mr. Lynn Patterson, general sales manager, age 55, had come up through the Sperry engineering staff, which he joined on March 2, 1917. From 1918-1928, he was in charge of searchlight engineering, and supervised the development of the modern anti-aircraft searchlight, which is now the U. S. Army standard model. He held several records for air travel as a passenger, and in 1938 was made president of the "80 Minute Club," an honor annually awarded to the passenger making the largest number of flights from New York to Washington.

FREDERICK BLIN VOSS

Frederick Blin Voss, aeronautical sales manager, age 41, graduated from the Naval Academy in 1922, and from the Chemical Warfare School in 1925, and the Submarine Officers Postgraduate. In 1935, he joined Sperry and soon showed remarkable interest and ability in the development of the aeronautical fire control, which has been so efficient in American and Allied Nations air combat units.

Pop Comfort Passes

Passing of **John Van Cott "Pop" Comfort** on May 5, in Berkeley, California, closed one of America's most colorful shipping careers. His age was given at 90 years, but close friends said that the venerable "Pop" was 92 years of age.

He was best known in shipping as a moving figure in the development of the old Pacific Mail Steamship Company to the Orient and to India, as well as in the Central American trade to Panama. Twenty years ago, Mr. Comfort left the Pacific Mail, when Robert Dollar Company secured control. He was superintendent.

LYNN PATTERSON

The tall, almost cadaverous figure, straight as an Indian chieftain, with his familiar goatee, was known along the waterfront and California Street from 1875, when "Pop" came here from his birthplace, Brooklyn, until he retired from his post with the De Pue Warehouse Company, about 10 years ago.

Until a few years ago, "Pop" would make an occasional visit to the floor of the Marine Exchange, but for the last three years he had remained at the home of his daughter, Mrs. Irving F. Morrow.

Pioneer Boat Builder Passes

George W. Kneass, 54, one of the best known of the "small boat" shipbuilders on San Francisco Bay, passed on, May 19, after a brief illness.

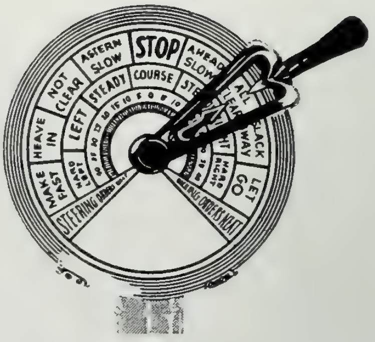
Son of a pioneer of the shipbuilding business, the name of Kneass has been identified with launch, tug and barge construction in San Francisco shipping for 70 years.

A widow, two daughters, Adrienne and Phyllis, and a brother, Webster Kneass, survive.

The company is currently working day and night on Government construction at its ways, adjacent to the Bethlehem Shipbuilding Corporation, Twentieth & Illinois streets.

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

RULES OF THE ROAD

PART VII—OVERTAKING—CROSSING

OVERTAKING SITUATION

Article 24.

An overtaking vessel is one coming up more than two points abaft the beam of the other vessel. Should doubt exist as to whether or not the overtaking vessel is two points abaft the beam of the other, then the overtaking vessel should assume herself to be the burdened vessel and keep clear. This rule also applies to a sailing vessel overtaking a steamer, and is the only situation in which a sailing vessel would be burdened in relation to an unencumbered steam vessel.

The overtaking vessel is obliged to keep clear of the overtaken vessel, and that burden lasts until she is finally past and clear; therefore, she shall not alter her course and speed in any way that would embarrass the overtaken vessel, even after she has passed forward of the other's beam. Article 21 places a duty upon the overtaken vessel to maintain course and speed and in no manner, after the passing has been agreed upon by the proper whistle signals, hinder the passage of the other vessel. The overtaking situation differs from the meeting situation in that the overtaking vessel may pass on either side, provided of course, that it is safe to do so.

This is the concluding article of a series that has been devoted to clarifying many hazy points in the Rules of the Road as construed in the United States of America. The response from the readers has been very gratifying to the Skipper, and we hope to receive many more questions from our readers. This column is for the benefit of our seagoing readers and their support makes the continuous articles possible.

Overtaking Situation Under the International Rules

Figure 1. Situation 1.

Vessel A shall hold course and speed as required by Article 21. Vessel B shall be burdened until she is finally past and clear. At position 1, vessel B decides she wants to pass on the starboard side of vessel A, therefore she sounds one blast on the whistle and directs her course to starboard, as prescribed by Article 28. Vessel A, is required to hold her course and speed, hence she does not answer the one blast signal given by vessel B. At position 2, vessel B may now return to her original course, giving notice of the change of course by two blasts of the whistle as required by Article 28. Vessel B does not answer the signal because she is holding her course and speed. Should the overtaking vessel be at the position of vessel B[1], then no change of course is necessary and the passage is made without any whistle signals.

Figure 1. Situation 2.

At position 1, vessel B decides to pass on the port side of vessel A, therefore she sounds two blasts of her whistle and directs her course to port as required by Article 28. Vessel A maintains her course and speed, so she remains silent.

At position 2, vessel B may return to her original course, giving notice of same by sounding one blast on the whistle, vessel A does not answer. At sea, these signals, especially the signal required at position 2, are frequently omitted by seamen, on the grounds that risk of collision does not exist; however, this omission is illegal, and the vessel failing to give the signal would be held liable in a subsequent collision. It is to be noted that under the International Rules, if the vessels are so far apart, either to starboard or to port, that it is not necessary for vessel B[1] to change course in order to pass clear, then the passing is made without any whistle signal at all.

Overtaking Situation Under Inland Rules

Article 18, Rule 8.

The Inland Rules differ from the International Rules in that an overtaking vessel in the inland waters of the United States must sound the signal prescribed for the side upon which she desires to pass the privileged vessel. This signal must be given whenever the vessels approach within one-half mile of each other, whether or not a change of course is necessary, as prescribed by Pilot Rule 3. The overtaken vessel must reply, either by a similar signal of assent, or with the danger signal to indicate dissent.

Figure 2. Situation 1.

In this situation, vessel B sounds one blast, meaning that she desires to pass on the starboard side of vessel A. If vessel A deems such passage safe and proper, she shall answer with one blast and maintain course and speed. Vessel B shall proceed to pass without unnecessary crowding. After vessel B is past and clear, she may return to her original course without any further signal to vessel A. Should the overtaking vessel be in the position of vessel B[1], where ample clearance is available to pass without change of course, the one-blast signal *must be* given and answered when the vessels approach within one-half mile of each other.

Figure 2. Situation 2.

Vessel B sounds two blasts, meaning that she desires to pass on the port side of vessel A. If vessel A deems the passage safe and proper, she will answer with two blasts and vessel B will proceed to pass on the port side of vessel A. When she is past and clear, she can return to her original course without further signal to vessel A. Vessel B[1] has ample clearance to pass vessel A without change of course but the two-blast signal *must be* exchanged before passing is attempted.

This method of passing is the most common when in narrow channels. If the overtaken vessel is keeping to the right, as required by Article 25, then it is better for the overtaking vessel to pass as outlined in this situation.

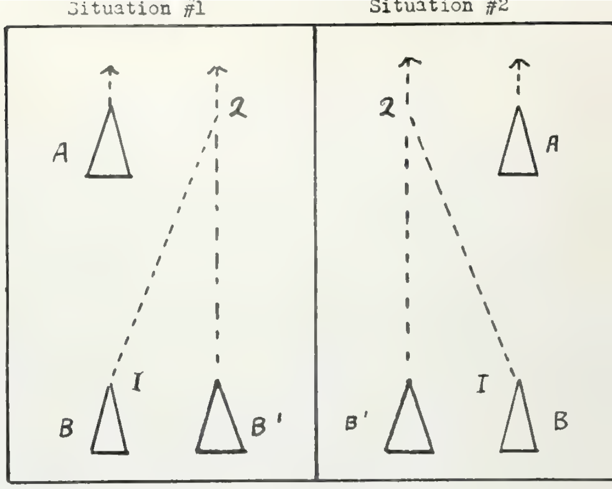
It should be noted that the passing signal from an overtaking vessel is not solely a request for permission to pass. It also asks for information which the overtaking vessel is entitled to have. When the overtaken vessel knows of conditions which may make the passing unsafe, it has no right to refuse to inform the overtaking vessel of such conditions, and, if it does refuse, it cannot then throw the entire blame for an accident upon the other vessel. Also, should the overtaking vessel propose by signal to pass and the overtaken vessel assents under known conditions of danger, and a collision follows, both vessels will be held at fault. On the other hand, the signal from the leading vessel is one of assent only, it is *not* a guarantee of a safe passage, it merely means that if the overtaking vessel exercises a high degree of good seamanship, then the passage can be made in safety.

Figure 2. Situation 3.

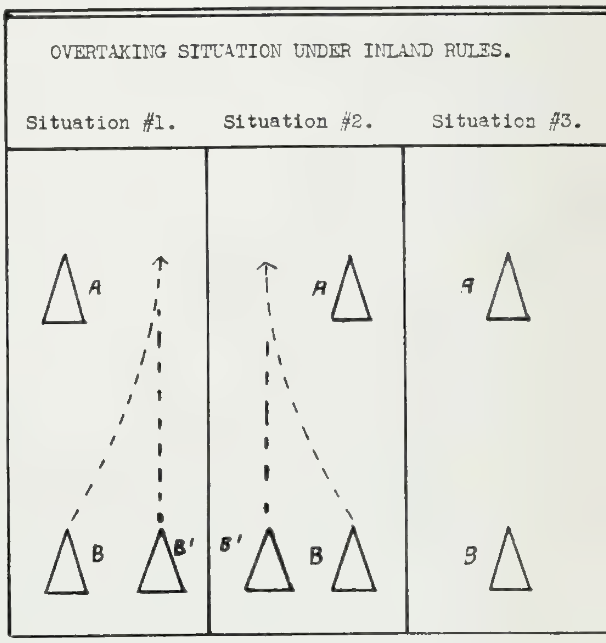
Vessel B sounds the passing signal, but vessel A does not deem it safe for vessel B to attempt to pass at all. Vessel A answers with the danger signal, and vessel B shall not attempt to pass until the proper signals are exchanged and agreed upon by both vessels.

Should vessel B sound the passing signal but vessel A deems it unsafe for her to pass on the side proposed, but is willing to agree to a passing on the opposite side, then vessel A shall sound the danger signal and shortly afterwards give the passing signal for the side which she deems safe. Vessel B may then answer with a similar signal and then make the passage.

Should vessel B neglect her duty to signal, then vessel A is free to alter course or to reduce speed, provided that she does not delay such action until the vessels are so close together that collision is inevitable. The rules contain no provision by which vessel A can notify vessel B of any intention to change course or speed.



(Figure 1.)



(Figure 2.)

Crossing Situation

The privileged vessel, that is the vessel which has the other vessel on her own port side is, by Article 21, required to hold her course and speed until, in her judgment, collision cannot be avoided by the action of the burdened vessel alone. The burdened vessel is governed by Articles 19, 22 and 23, and is required to avoid the privileged vessel in any manner that the circumstances justify, except by crossing her bow.

Bearings should always be taken to ascertain if risk of collision exists. If there is no appreciable change in the relative bearings between the two vessels, then risk of collision exists.

International Rules

In the crossing situation under the International Rules, the only signal that the privileged vessel can give to call the attention of the burdened vessel is the detonating signal or a flare-up light, as prescribed by Article 12. This however, is an optional signal and is rarely, if ever used, by modern steamers. The danger signal would be more appropriate in this situation, however its use is not authorized in the International Rules. On account of the privileged vessel being required to hold her

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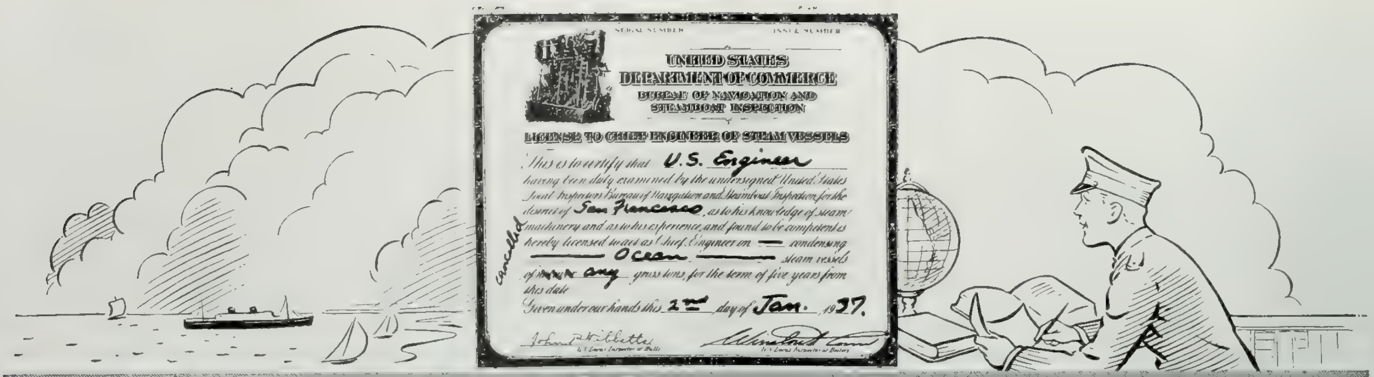

SERIAL NUMBER ISSUE NUMBER

UNITED STATES
DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION AND
STEAMBOAT INSPECTION

LICENSE TO CHIEF ENGINEER OF STEAM VESSELS

This is to certify that U.S. Engineer having been duly examined by the undersigned United States Local Inspectors Bureau of Navigation and Steamboat Inspection for the district of San Francisco, as to his knowledge of steam machinery and as to his experience, and found to be competent is hereby licensed to act as Chief Engineer on — condensing —— Ocean —— steam vessels of any gross tons, for the term of five years from this date

Given under our hands this 2nd day of Jan. 1937.

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U.S. Local Inspector of Boilers

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ELECTRIC PROPULSION FOR TANKERS

We present in the accompanying diagram the schematic connections of the alternating current portion of the tanker equipment. This diagram should be carefully studied in connection with the associated list of references to the numbered figures on the diagram. This will constitute at once a list of equipment, the ratings, and their relative connections.

Next month, we will present the equivalent diagram for the dc equipment.

Propulsion Control

Briefly, the propulsion control consists of two main control levers at the control stand in front of a board having the indicating meters on it. These are as follows, and would be handled in this order, starting with all in the "off" position:

1. The reversing lever is linked to the reversing switch, Item 9 in this diagram.

It is moved into the desired direction. The turbine generator is running at about one-fourth, or one-third, speed under accurate speed control of a speed governor.

As the reversing lever moves to the first point, it sets up the reversing switch for the desired direction. When this is done, the generator field is applied. This starts the motor as an induction motor, and, after a few seconds, the lever is moved further, which energizes the motor field which causes it to *pull* into *step* as a synchronous motor. This is the end of travel on this lever.

FOREWORD

The question has been asked "What is all this information about electric propulsion for tankers, when the trend is definitely fixed toward gear drive for ships?" The answer is that the trend is not at all fixed toward gear drive but toward a definite engineering application of drive to ship requirements and usage. Fifty-two oil tankers are being built at Sun Shipbuilding and Dry Dock Co. with electric propulsion for the U. S. Maritime Commission.

Thus, hundreds of marine engineers will have to become familiar with this equipment and ac electricity within the next 24 months.

2. The speed lever is moved slowly to the desired speed position, which tightens the speed governor spring. The turbine speeds up, bringing up the motor with it.

To stop, the lever is moved to "slow" and the reversing lever centered.

All levers are mechanically interlocked to prevent any false operation.

Alternating Current System of Electric Propulsion Oil Tanker

(Numbers refer to accompanying sketch.)

1. Main propulsion generator; 5400 kw, 2300 volt, 3 phase, 60 cycle, 3600 rpm, 2 pole, steam turbine driven.
2. Dc field for Item 1, 120-volt excitation.
3. Field discharge resistor. For connections, see dc sketch next month.
4. Main propulsion motor; 6000 hp, 3 phase, 60 cycle, 2300 volt, 90 rpm, 80 pole.
5. Dc field for main motor, 120 volt.
6. Discharge resistor for 5. For connections see dc sketch next month.
7. Three current transformers; 2000 amperes to 5 amps. To switchboard indicating meters and relays.
8. 2300-volt, 3-phase propulsion bus bar.
9. Propulsion motor reversing switch, operated from control stand, double mechanically interlocked so that it cannot be operated with field and ac voltage on throw and "off" middle position.

10. Two current transformers; 2000 to 5 amperes to switchboard indicating meters.
11. Two potential transformers; 2300 to 115 volts, supplies 115 volts to voltage regulator, metering, and frequency relays.
12. Disconnecting switch; 3-pole, single throw, 5000 volt, 600 ampere.
13. Three-pole, air-blast circuit breaker; 5000 volt, 600 ampere, mechanically interlocked with Item 12 to prevent opening or closing 12 unless 13 is open. Can be operated with ac voltage on bus bar.
14. Three current transformers; 200 to 5 amperes for breaker tripping and ammeters.
15. Bank of 3 transformers; each 200 kva, 2300 to 460 volt, Pyranol filled (a non-flammable oil-like liquid), total capacity, 600 kva. Supplies propulsion generator power, variable frequency, to pump motors.
16. Two potential transformers; 440 to 110 volts, supplies volt meters and frequency meters.
17. Two potential transformers; 440 to 110 volts on constant frequency bus bar, supplies volt meters and synchronizing indicators.
18. Three-pole air circuit breakers, interlocked in pairs to prevent both breakers on one circuit being closed at same time. These control pumping circuits.
19. Two current transformer supply meters.
20. Two hundred-hp, 440-volt, 3-phase, 60-cycle cargo pump No. 1.
21. Two hundred hp, same as Item 20, pump No. 2.
22. Two hundred hp, same as Item 20, pump No. 3.
23. Fifty-hp, 440-volt, 3-phase, 60-cycle, stripping pump No. 1.
24. Fifty hp., same as Item 23, pump No. 2.
25. Four - hundred - and - forty - volt shore connection, 3 phase, 60 cycle.
26. One - hundred - and - ten - volt, 3-phase, 3-wire shore connection.
27. Six - hundred - ampere air circuit breaker for Item 25.
28. Six - hundred - ampere air circuit breaker for Item 26.
    This breaker is interlocked mechanically with Item 27 to prevent both being closed at same time.
29. Three-pole disconnecting switch for auxiliary generators.
30. One-hundred-ampere air circuit breaker, 50-kw generator.
31. Eight-hundred-ampere air circuit breaker for 400-kw auxiliary generator No. 1.
32. Eight-hundred-ampere air circuit breaker for auxiliary generator No. 2.
33. One-hundred-ampere air circuit breaker, 70 amp trip, to 45 kva, 115-volt transformer bank, Item 45.
34. Represents several miscellaneous air circuit breakers and feeders to 440-volt motors, auxiliary load.
35. Three current transformers, 120 to 5 amperes; two are for metering and relap, one for voltage regulator for power factor balance.

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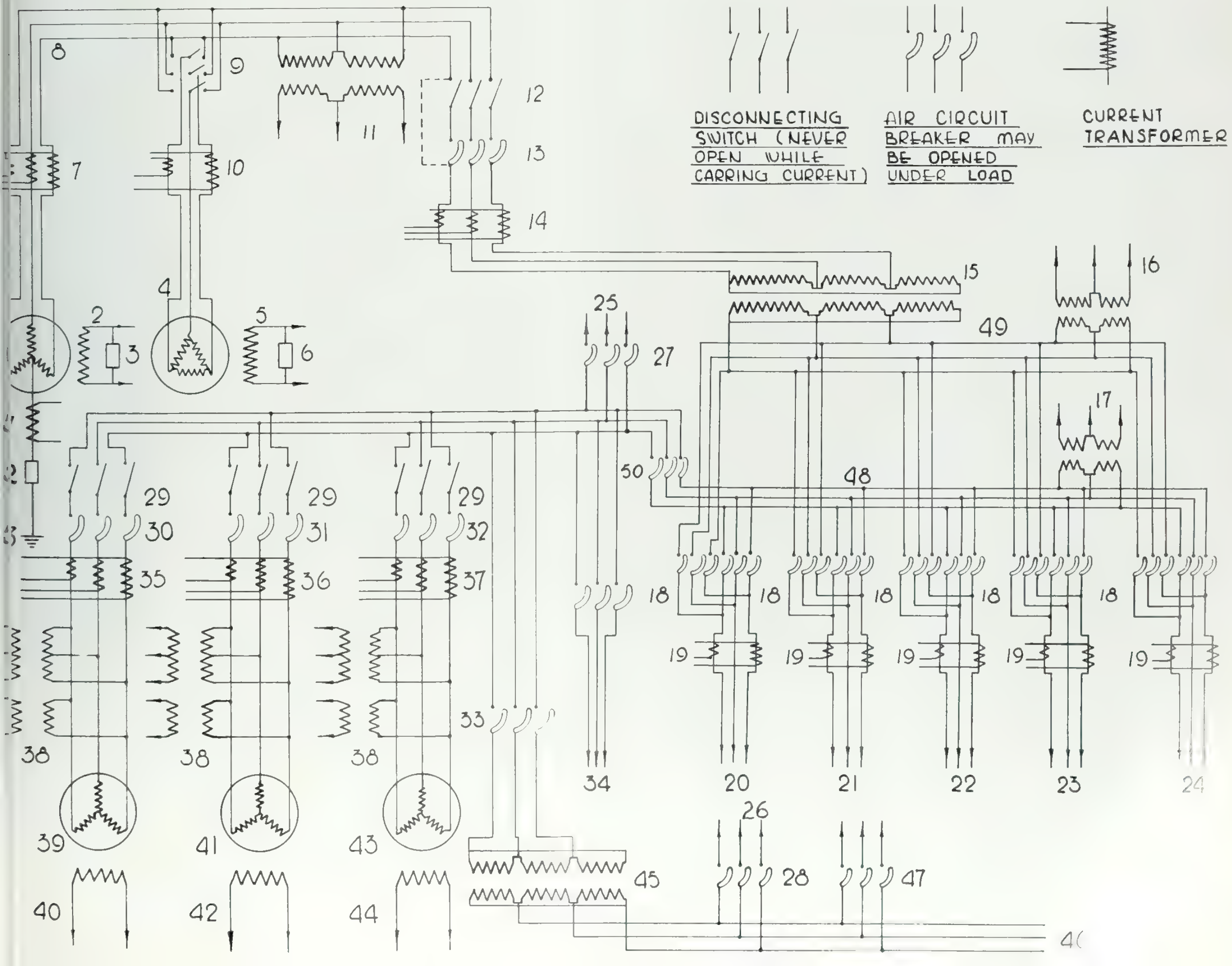

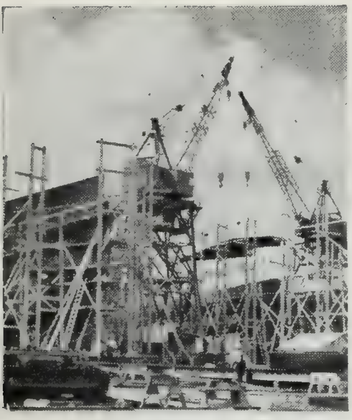

On the Ways—

SHIPS IN THE MAKING

Maritime Day Launchings and Deliveries

Yard	Name of Ship
Alabama Dry Dock & Shipbuilding Co., Mobile	*Alexander H. Stephens*
American Shipbuilding Co., Lorain, Ohio	*Irving S. Olds*
South Portland Shipbuilding Co. South Portland, Maine	*Ocean Courage* *Ocean Fame*
Brunswick Marine Construction Corp. Brunswick, Ga.	*Port Wentworth*
Calumet Shipyard & Drydock Co., Chicago, Ill.	*Port Alleghany*
Canulette Shipbuilding Co., Slidell, La.	*Port Allen* *Port Barre*
Consolidated Steel Co., Los Angeles, Calif.	*Mormacwren*
Great Lakes Engineering Co., Detroit, Mich.	*A. H. Ferbert*
Houston Shipbuilding Corp., Houston, Texas	*Michael J. Stone* *Stephen F. Austin*
Ingalls Shipbuilding Co., Pascagoula, Miss.	*Trailer*
North Carolina Shipbuilding Co., Wilmington	*William Moultrie*
Oregon Shipbuilding Corp., Portland, Ore.	*Washington Irving* *James Fennimore Cooper* *Thomas Bailey Aldrich*
Richmond Shipyard No. 1, Richmond, Calif.	*Ocean Viceroy*
Richmond Shipyard No. 2, Richmond, Calif.	*Irvin Mac Dowell* *Lewis Morris*
Pusey & Jones Corp., Wilmington, Del.	*Hoffman*
Seattle-Tacoma Shipbuilding Corp., Tacoma	*Barnes* *Altamaha*
Sun Shipbuilding & Drydock Co., Chester, Pa.	*Dorchester Heights*
Bethlehem-Fairfield, Baltimore, Md.	*William Johnson* *Richard Bassett*
Bethlehem-Sparrows Point, Baltimore, Md.	*Calvert*

Setting an outstanding record for both launching and delivery of new merchant tonnage, American shipyards on the Atlantic, Gulf and Pacific Coasts, as well as on the Great Lakes, launched 27 new vessels and placed into service four ships, the Maritime Commission announced May 23 in a final count on Maritime Day activities.

Rear Admiral Howard L. Vickery, Vice Chairman of the Maritime Commission, hailed this national production record as American shipyard workers' contribution to the United Nations' war effort. Admiral Vickery cited the all-time record of the workers at the Oregon Shipbuilding Corporation, which cut down the time of construction of a Liberty ship from the regular 105 days to 60 days.

Addressing the Maritime Day dinner of the Propeller Club of New York, Admiral Vickery declared that he had received word from the West Coast stating that the Portland, Oregon, yard delivered three Liberty ships on Maritime Day.

"The first of these," he said, "is the *Samuel Moody,* the keel of which was laid 71 days ago; the second is the *John Sevier,* the keel of which was laid 65 days ago; and the third is the *Jonathan Edwards,* the keel of which was laid 60 days ago. Seventy-one days, 65 days, and 60 days, from keel-laying to delivery. Today, in rapid succession, three world's records have been shattered. To the workers and management of the Oregon Shipbuilding Corporation, I send congratulations and the thanks of a grateful nation."

The Oregon yard, in addition, set the day's pace by launching three new vessels, the *Washington Irving,* the *James Fenimore Cooper* and the *Thomas Bailey Aldrich.* The last was launched in the record time of only 36 days on the ways. Immediately keels were laid for three new vessels.

Two vessels each were launched in six yards throughout the country, and one each was launched in 12 others.

The complete list of launchings appears above.

Todd Launches Six On Maritime Day

The launching May 22 of six ships by Todd Shipyards Corporation, its subsidiaries and affiliates, culminated eight days of shipyard activity, in which ten vessels, both naval and merchant, were added to the United Nations "Victory Fleet." In addition, one British vessel, *Ocean Hope,* was delivered to its operators by a Todd yard, making a total of eleven ships;

five naval craft; three vessels for the U. S. Maritime Commission; and three for the British Government.

To a Todd went the honor of launching the first ship on this, the first wartime Maritime Day ever celebrated, as U. S. S. *Barnes* slid down the ways of the Tacoma plant of the Seattle-Tacoma Shipbuilding Corporation, West Coast subsidiary of Todd. This vessel left the ways at 12:01 a.m., Pacific War Time, and thus marked the opening of the nation-wide ceremonies held on Maritime Day. The Tacoma yard also closed the day's activities with the launching of U. S. S. *Altamaha* at 11:45 p.m., Pacific War Time.

Steamers launched, in addition to the above two, were *Michael J. Stone* and *Stephen F. Austin,* from the Houston Shipbuilding Corporation; and *Ocean Courage* and *Ocean Fame,* from the yard of the Todd-Bath Iron Shipbuilding Corporation, South Portland, Maine.

May 15 witnessed two Todd launchings. U. S. S. *Core,* originally built for the Maritime Commission, was launched as a Naval aircraft tender by the Tacoma plant of the Seattle-Tacoma Shipbuilding Corporation, while the South Portland Shipbuilding Corporation inaugurated its launching program when the S. S. *John Davenport* left the yard at South Portland, Maine.

The following day, the Seattle branch of the Seattle-Tacoma Shipbuilding Corporation presented the United States Navy with another destroyer when it launched U. S. S. *Frankford;* and on May 17, the Bath Iron Works Corporation, which holds an interest in the Todd-Bath and South Portland yards, followed suit by also launching a destroyer.

The next day, May 18, the Todd-Bath firm delivered another vessel to the British Government when the *Ocean Hope* was handed over to her operators.

Tank Lighters to Bay Region Firms

The following firms have received contracts for tank lighters from the Navy Department: Soule Steel Company, San Francisco and Los Angeles, 80; Boiler Tank & Pipe Company, Oakland, 20; Moore Equipment Company, Stockton, 50; Judson-Pacific Company, San Francisco, 27.

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Commission Awards More Barges

To relieve the shortage of ships to move bulk commodities, including petroleum products, in the coastwise trade, bids were invited by Maritime Commission on May 12 from more than 700 contractors for the construction of 180-foot wooden barges of 750 deadweight tons at 11-foot draft, also, a contract was awarded for the building of 18 additional 360-foot concrete barges to the **MacEvoy Shipbuilding Corporation,** Savannah, Ga., which is now building five of the fifteen such barges already under order. When fully loaded the concrete barges will have a draft of not in excess of 28½ feet. Their capacity is between 5000 and 8000 long tons, depending upon the bulk commodity carried.

Plywood Barge Award

Early in May, the Army awarded Prefabricated Ships, Inc., Olympia, Washington, a contract for three plywood barges at a cost of $68,000. This is expected to be a forerunner of more contracts for this type of barge.

More Tugs Awarded

Contracts for the construction of five ocean-going tugs have been awarded to the Globe Shipbuilding Company, of Superior, Wisconsin, making a total of 10 such vessels awarded this company, the Maritime Commission announced recently.

These diesel-propelled tugs, known as design V4-M-A1, are the largest commercial vessels of their type.

The Maritime Commission announced on May 7 that contracts have been awarded for the construction of eight additional seagoing tugs of the V4-M-A1 design.

Of the eight vessels, four are to be constructed by the Avondale Marine Ways, Inc., at New Orleans, Louisiana, and the remaining four by Froemming Bros., Inc., Shipbuilding Division, at Milwaukee, Wisconsin. Each of these companies now has a contract for the construction of four tugs of the same design. These awards bring the total number of tugs of this type now under order to 38. All are to be delivered prior to July 1, 1943.

Richmond—New Contract New Records—New Keel

Permanente Metals Corp., Richmond, California, was awarded 38 additional Liberty ships by the Maritime Commission in May, making a total of 253 cargo vessels ordered from the company. **Richmond Shipyard Number One** and **Richmond Shipyard Number Two** have together launched 32 ships and delivered 26, which includes the emergency vessels being constructed by the former yard for the British Purchasing Commission.

On May 14, the newly completed **Richmond Shipyard Number Three** laid the first keel of the new C-4 type vessel. The second keel was laid on Maritime Day, May 22. The yard was built in the record time of less than four months and is the largest of the three Richmond yards.

"Oregonship" Gets 42 More "Libertys"

Oregon Shipbuilding Corporation, Portland, Oregon, has been awarded a contract for the construction of 42 additional Liberty ships, the Maritime Commission announced in May, bringing their total number of emergency cargo vessels to 173.

Of the 131 vessels already under contract, 31 had been launched, and 23 had been delivered into service up to May 1. The new award calls for the delivery of three of the 42 ships in 1942 and the remaining 39 in 1943.

One-a-Day Deliveries Exceeded in April

Exceeding the one-a-day schedule set up for April, American shipyards completed and delivered into actual service during that period a total of 36 merchant vessels, the Maritime Commission announced in May.

The April achievement brought the record for the first four months of 1942 to 106 merchant ships placed in war service of the United Nations.

During this month, shipyards throughout the country launched 51 merchant vessels, far more than double the number launched in January, the beginning of the four-month period. For the whole four-month period approximately 200 keels were laid for new Maritime Commission construction.

Pullman To Produce One Subchaser a Week

Construction of the first all-steel anti-submarine patrol ships ever built in the Chicago region will begin in early summer at the shipyard now being erected by the Pullman-Standard Car Manufacturing Company.

By means of streamlined production methods, which call for fabrication of large sections of the ships in the company's car works with final assembly on the ways, the yard will ultimately turn out a ship a week, according to Commander W. R. Dowd, supervisor of shipbuilding, USN, for the vicinity of Chicago, and C. A. Liddle, Pullman-Standard president, who made the announcement jointly.

It was pointed out that many of the trades employed in car building are identical to those required in shipbuilding.

"Calship" To Expand

With an expansion expenditure of $3,000.000 to $4.000,000, the **California Shipbuilding Corporation** will be the largest shipyard in the nation, according to an announcement from company officials on May 24.

This planned expansion will allow 50 per cent more tonnage production by the end of 1943.

Even now, "Calship" is ahead of schedule, and, with the launching of S. S. *James Schureman* late in May, 62 days from keel laying, they broke a yard record which was set a week previous with the launching of S. S. *John Page,* 70 days on the ways. The yard also delivered its 17th Liberty ship the last part of May.

Navy Launchings on San Francisco Bay

On May 2, two more naval vessels—a submarine and an auxiliary craft—were launched as new links in the San Francisco Bay area's unbroken chain of ship construction.

At the **Mare Island Navy Yard** the submarine *Sunfish,* first American Navy craft of that name, went down the ways eight months ahead of her scheduled launching date. Mrs. Joseph W. Fowler was sponsor at the brief ceremony. She is the wife of Captain Joseph W. Fowler, U. S. N., chief of repair and conversion activities in the San Francisco Bay area.

At the **Pacific Coast Engineering Company** in Alameda the U. S. S. *Nawkaw,* Naval harbor tug, was launched, with Mrs. Mamie Lois Bentley, wife of the rigger foreman at the yard, as sponsor.

On May 6, the **General Engineering & Dry Dock Company,** Alameda, California, yards, launched the mine sweeper U. S. S. *Swallow.* Mrs. Nellie E. Burnett, wife of Arthur W. Burnett, foreman pipefitter at the shipyard, sponsored the craft.

On May 8, the **San Francisco Yard of Bethlehem Steel Co.** launched the destroyer U. S. S. *Gillespie,* named for the late Major Archibald Gillespie of the Marine Corps, who was the military commander of Los Angeles under General Fremont during the Mexican War. It was sponsored by Mrs. Hugo Osterhaus, wife of Rear Admiral Osterhaus, commander of the 12th Naval District patrol forces.

On May 16, adding another small but important unit to the rapidly growing number of naval auxiliary vessels, the harbor tug U. S. S. *Osamekin* was launched at the yards of the **Pacific Coast Engineering Company** in Alameda. Sponsor was Mrs. May Negley, wife of the shipfitter foreman of the yard.

On May 27, sponsored by the mother of five sons now serving in the Navy, the U. S. S. *Sioux,* a fleet auxiliary, was launched at the **United Engineering Company** yards on the Oakland Estuary.

Mrs. Evelyn H. Sims from Jefferson, Texas, was invited by the Navy Department to sponsor the ship.

On May 30, the U. S. S. *Negwagon,* a harbor tug, was launched at the yards of the **Pacific Coast Engineering Company** in Alameda. The ship was sponsored by Mrs. Norman Roberson, wife of the chief loftsman of the shipyard.

Four Barges a Week

The launching of four barges per week, for the past thirteen weeks, is the record claimed by the Marine Department of the American Bridge Company, L. A. Paddock, president of the United States Steel Corporation Subsidiary, announced May 19. This production enabled the company to complete in record time an order for 60 all-welded coal barges of 1000 net tons capacity.

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GENERAL ENGINEERING
and DRY DOCK COMPANY

Moore Launchings

On May 29, two large Navy auxiliaries were launched at the **Moore Dry Dock Company** in Oakland, the first naval ships to be put into the water in the yard.

The first off the ways was the U.S.S. *Chanticleer,* the keel of which was laid September 15, 1941, sponsored by Mrs. Walter K. Kilpatrick, the wife of Captain Walter K. Kilpatrick, Chief of Staff of the Western Sea Frontier.

The second ship launched was the U. S. S. *Coucal,* which was started September 30, 1941, at Moore's. The sponsor was Mrs. David A. Scott, wife of Captain David A. Scott, who is attached to the Western Sea Frontier.

Consolidated Launches Two

Two C-1-B vessels, built for the U. S. Maritime Commission and the Moore-McCormack Lines, Inc., were launched within ten days of each other at the **Consolidated Steel Corporation** yard at Wilmington, California. On May 22, the S. S. *Mormacwren* hit the water at 5:00 p.m., sponsored by Mrs. Lloyd R. Earl, wife of the vice president of the yard.

On June 1, S. S. *Mormacdove* slid down the ways at 12:30 p.m., sponsored by Mrs. Edwin W. Pauley.

New Tacoma Yard

The Petrich Shipbuilding Corporation, Tacoma, plans to build a plant with three ways, machine shop and mold loft, according to announcement by Martin Petrich, president. Main building will be 400 x 150 ft. in area.

Yard Needs Machinery

A considerable amount of machinery and equipment for the building of barges, boats and other craft is needed by the Martinsen Shipyards, Seattle, Washington, in connection with development work in Anacortes, it was reported late in May.

Sub Launched in Wisconsin Waters

The first submarine ever built for the U. S. Navy on inland waters was launched on April 30 when the 1500-ton Peto splashed sidewise into the waters of Manitowoc River.

Federal Launches Four Destroyers on Same Day

A new world's launching record was established on May 3 when four United States Navy destroyers slid down the ways within an hour at the yard of the Federal Shipbuilding and Dry Dock Company, subsidiary of United States Steel Corporation.

The impressive parade down the shipways was begun with the launching at 11:40 A.M. of the U. S. S. Fletcher, followed at 11:55 o'clock by her sister ship on the same wide way, the U. S. S. Radford. Twin destroyers on a neighboring shipway then took to the waters of the Hackensack River. They were the U. S. S. Quick, which slid off dry land at 12:15 P.M., and the U. S. S. Mervine, which terminated the procession of new sea power at 12:30 P.M.

Another world's record is expected to be established in the near future when the four fighting ships are scheduled to be completed and delivered to the Navy by the Federal company.

Navy Launchings In Northwest

On May 16, the seaplane tender *Coos Bay* was launched at the **Lake Washington Shipyards** at Houghton, Washington. A few hours later, the Tacoma yard of the **Seattle-Tacoma Shipbuilding Corp.** launched the U. S. S. *Core,* originally designed as a C-3 cargo vessel and now destined for duty as an airplane carrier.

On May 19, the **Willamette Iron and Steel Corporation,** Portland, Oregon, launched the mine layer U. S. S. *Catskill,* the largest naval vessel ever to hit the waters in the Columbia River district. It was sponsored by Mrs. James C. McPherson, wife of Commander McPherson, U. S. N.

On May 22, the Tacoma yards of the **Seattle - Tacoma Shipbuilding Corp.** launched two more airplane carriers, converted from C-3 freighters. They were the U. S. S. *Barnes* and the U. S. S. *Altamaha,* this yard's contribution to the launching ceremonies of Maritime Day.

On May 23, two mine sweepers went down two different ways at Seattle: the BYMS 27 at the **Ballard Marine Railway;** the BYMS 23 at the **Seattle Shipbuilding & Dry Dock Co.**

Correction: The mine sweeper *Annoy,* announced in the May issue of Pacific Marine Review as being a wooden vessel, is a steel vessel as are all the mine layers being built by the **Commercial Iron Works,** Portland.

Cooperative Yard At Sausalito

With 64 shipyard workers of various trades banded together in a cooperative shipbuilding company, the Oakland Shipbuilding Corporation, originally planned for a site in Oakland, California, was started the first part of the year in Sausalito, California.

The first keel for a number of Government cargo barges was laid on May 12 on hand-hewn ways. Launching of this barge is expected within 28 days from keel laying.

D. F. Baker, a master shipfitter, is president of the shipyard. The other officers are: Vice President Robert E. Oberer, boilermaker; Secretary-Treasurer Ernest Collins, shipfitter, and Office Manager Earl Harris.

"Oregonship"—Delivers 48 Days From Keel Laying

Not content with breaking all previous records with the delivery of *Mark Twain* on May 31, just 56 days after keel laying, the Oregon Shipbuilding Corporation, the very next day, delivered *Thomas Bailey Aldrich* 48 days from keel laying.

On May 31 the yard also launched its 41st Liberty vessel, 38 days on the ways.

Consolidated Texas Launches Two Destroyers Same Day

Two destroyers went down the ways May 7 at Consolidated Steel Corporation's huge shipyard in Orange, Texas, dealing two more body blows to the Axis.

The first ship, the U. S. S. *Harrison,* slid gracefully into the Sabine River at 11:30 in the morning, sponsored by Mrs. Harry B. Hird, wife of the General Manager of the shipyard, Capt. Harry B. Hird, who is also a vice president of Consolidated. Exactly three hours later, at 2:30 p.m., the U. S. S. *John Rodgers* got her first taste of water, sponsored by Miss Helen Perry Rodgers.

Penn Launches Another on Bananas

Another American Naval hero was honored at the Pennsylvania Shipyards, Inc., Beaumont, Texas, when the M. S. Cape Porpoise slid down the banana way into the waters of the Neches River.

Mrs. A. T. Stevens of Beaumont, mother of Jack Hazelip Stevens, seaman first class, in the United States Navy, who lost his life aboard the U. S. S. Arizona during the Japanese bombing of Pearl Harbor, sponsored the vessel, one of the Commission's standard C-1 type ships.

New Northwest Yards

Planned for the production of fishing boats, the **Puget Sound Shipbuilding Co.** late in May filed incorporation papers at Olympia, Washington. The incorporators are: John D. and C. R. Martinolich, J. J. Petrich, John Breskovich, Theodore and Wm. L. Healy.

Columbia Shipbuilding Company, Portland, Oregon, leased facilities of the Klepp Marine Ways of that city for marine construction. Erick Klepp, owner, will be retained as superintendent of operations.

Incorporation papers were also filed by the **Rainier Shipbuilders, Inc.,** at Olympia, Washington. Kemper Freeman, Miller Freeman, Jr., and Lawrence K. Smith are the incorporators.

Joshua Hendy To Increase Engine Production

In connection with its Liberty ship construction program, the Maritime Commission in May announced authorization of $4,000,000 expansion of facilities at the Joshua Hendy Iron Works, Sunnyvale, California, for production of additional reciprocating engines, financed through the Defense Plant Corporation.

The company is currently producing at the rate of ten engines per month with contemplated progressive increases which will step up the rate to nineteen engines per month by the end of September, 1942. Production will be increased until December, 1942, when a rate of thirty engines per month will be reached and maintained.

Federal Delivers Destroyer

Delivery to the U. S. Navy May 12 of the destroyer Lardner at the New York Navy Yard, Brooklyn, almost six months ahead of the contract date, was made by the Federal Shipbuilding and Dry Dock Company, a subsidiary of the United States Steel Corporation.

The ship was launched at the Federal Shipyard, Kearny, N. J., on March 20 under the sponsorship of Mrs. Sidney F. Tyler, 2nd, of Paoli, Pennsylvania, the great granddaughter of the late Rear Admiral James Lawrence Lardner, U.S.N., for whom the vessel was named. This is the second destroyer to bear the name Lardner. The first was decommissioned and scrapped.

Sun Plans Yard For Negro Workers

Approximately 9000 negro workers will be employed in a yard to be built by the Sun Shipbuilding Company, according to an announcement by John G. Pew, president, on May 27.

Although these workers will be under the direction of white workers in the start, Negro workers already employed by the company will be trained for promotion to supervisory capacities.

Censorship of Shipping Documents

In order to prevent information concerning the movements of vessels reaching enemy hands and to expedite passing shipping documents through the censor stations, it is requested that in the future shipping documents comply with the following conditions:

1. International communications, which for the purpose of censorship includes correspondence with Hawaiian Islands, Alaska, Puerto Rico and Canal Zone, are covered by this direction.

2. It is requested that actual dates be omitted from the following:

Consular Invoices
Certificates of Origin
Certificates of Inspection
Weighmaster's Certificates
Commercial Invoices
Packing Slips
Shipping Orders
Insurance Certificates
Bank Drafts
Bank Advices
Letters of Transmittal
Bills of Lading

and all other documents or correspondence relating to the movement of a vessel. In place of an actual date, it is requested that no date beyond the month and year be used, i.e., **"May 1942."**

3. Names of vessels will be omitted, and in lieu thereof the word, **"A Vessel,"** followed by the line and voyage number, i.e.,

"A Grace Line Vessel, Voyage No. 104," or

"A Matson Line Vessel, Voyage No. 104."

4. The above covers documents which are intended to pass through the mail. No objection is made to inserting in the "Held," or Office Copy, all complete known data, together with the actual date of issue.

W. S. A. Maintenance and Repair

Captain N. Nicholson has been named special assistant to director general of the WSA to direct and coordinate maintenance and repair work for all vessels under the War Shipping Administration. Captain Nicholson will make New York his headquarters. **R. T. Lemon** was named as executive manager of the division.

This repair and maintenance division has just been created. **Walter Martignoni** has been named district manager for the Pacific Coast.

Walter Martignoni is widely known in Pacific marine circles as one of the ablest men on construction and repair problems. He is of the firm of Pillsbury and Martignoni, which was formerly Pillsbury & Curtis. Mr. Martignoni will make his headquarters in the San Francisco office of the Maritime Commission.

EXHAUST TURBOCHARGERS

(Continued from page 54)

highest quality made by a special process, and is completely inspected by radiograph. The impeller is overspeeded separately, and the complete rotor balanced statically and dynamically, before assembly in the unit.

Since the rotor is supported from the blower end of the unit, there is no necessity for a bearing at the turbine end which would be subjected to high temperature. Steel-backed, babbitt-lined sleeve bearings are used, and are lubricated by oil under pressure. A separate self-contained lubrication system is generally used, in order that lubrication of the turbo-charger be independent of engine lubrication. In some installations, lubrication is provided from the engine pressure-lubricating system, in which case a separate twin filter element is provided for the turbocharger oil supply.

The turbocharger is generally supported by a bracket attached to the engine frame, with the rotor axis parallel to the engine crank shaft. This permits the shortest and straightest exhaust manifolds to the turbocharger inlet. Expansion joints must be provided in the exhaust manifolds at appropriate locations, to compensate for expansion and contraction of the manifolds with temperature changes, and to relieve the turbocharger of all piping strains. Exhaust manifolds should be insulated as completely as possible to minimize heat radiation. In some cases, each individual pipe is insulated separately, and with other designs, a single insulated housing surrounds the entire assembly of exhaust manifolds. In still other cases, water-jacketing is employed to various degrees, the ideal being to eliminate heat radiation to the engine room without removing an appreciable amount of useful energy from the exhaust gases within the manifolds. Figure 2 illustrates a turbocharged engine of conventional arrangement, with an insulated housing around the manifolds.

Intake air to the blower is generally taken directly from the engine room, in which case a silencer is attached to the blower inlet. In other instances, air is conducted to the unit by means of piping from an external source. Installation of an air intake filter is recommended in installations where the air contains dust, excessive oil vapors, or other impurities.

The turbocharger is a rugged and relatively simple machine. When assembled and installed properly, only a normal amount of operating attention should be necessary. The principal requirement is an uninterrupted supply of clean lubricating oil under moderate pressure. Continuous circulation of cooling water through the turbine casing is also essential.

In cases of emergency, the engine may be operated with the turbocharger rotor blocked, and approximately the same B.M.E.P. rating can be carried with the turbocharger inoperative as with the same engine normally aspirated. Operation can thereby be continued until repairs can be made.

Problems Answered

(Continued from page 69)

36. Three current transformers, 1000 to 5 amperes. Same use as Item 35.
37. Three current transformers, 1000 to 5 amperes; same use as Item 35.
38. Three potential transformers, 440 to 110 volt; two for synchroscope and volt meters, one for voltage regulator.
39. Fifty-kw, 460-volt, 3-phase, 60-cycle port generator, direct connected to its own exciter and steam

MARINE DEPARTMENT
AETNA INSURANCE CO.
QUEEN INSURANCE CO.
MARITIME INSURANCE CO., LTD.
FIDELITY PHENIX FIRE INS. CO.
Commercial Hull Dept.
AUTOMOBILE INS. CO.

MATHEWS & LIVINGSTON
Marine Underwriters
200 BUSH STREET · · · · SAN FRANCISCO
Offices at: Colman Bldg., Seattle · 111 West 7th St., Los Angeles

turbine driven. For exciter connections, see dc sketch.

40. Dc 120-volt, 50-kw, generator for port use.
41. Four-hundred-kw auxiliary generator No. 1, steam turbine driven. This set comprises: one turbine, 525 kw capacity, direct connected to one 400-kw, 3-phase, 60-cycle, 460-volt, ac generator; one 75-kw, 120-volt dc generator, used as excitor main ac generator and motor; and one 50-kw, 115-volt dc generator, for use as either exciter for ac auxiliary generator, or as supply for 110-volt dc feeder for various dc ship's service. See next month's issue for dc circuits and equipment.
42. Field for 400-kw auxiliary generator. For connection see dc sketch next month.
43. Four-hundred-kw auxiliary generator No. 2, same as Item 41.
44. Field, 120v dc, for Item 43.
45. Three 15-kva transformers, 440 volt to 110 volt, one phase, 60 cycles. Total bank capacity, 45 kva, supplies 110 volt bus bar, Item 46.
46. One-hundred-and-ten-volt, three-phase, 60-cycle, three-wire bus bar for ship's lighting and small power.
47. Represents several miscellaneous 3-phase, 110-volt feeders and air circuit breakers for lighting.
48. Pumping bus bar, 460-volt constant frequency power from the three auxiliary ac generators.
49. Pumping bus bar, 460 volt variable frequency from propulsion generators through transformers 15.
50. Air circuit breaker, 800 ampere from auxiliary generator bus bar to pumping bus bar 48.
51. Current transformer to indicate ground current and operate alarm.
52. Resistor to limit current to ground.
53. Grounding connection for neutral.

STEADY AS YOU GO

(Continued from page 67)

course and speed she cannot sound either the one-, two- or three-blast signal. When the privileged vessel arrives at that point where collision cannot be avoided by the action of the burdened vessel alone, then the privileged vessel is "in extremis" and she must act in accordance with Articles 27 and 29. At this point any action deemed necessary to avoid collision must be exercised immediately, and any change of course must be accompanied by the proper whistle signal.

Error in Extremis

When the privileged vessel has obeyed the law to the letter until she arrives at the point where she is "in extremis" and then the navigator on the bridge executes or attempts to execute, in the very "jaws of collision," some maneuver which is proven later to be unwise, and its contribution to the collision is uncertain, his action is known as "error in extremis." If such action was taken in good faith, then the vessel will be excused from liability in the collision. The privileged vessel must at no time alter her course or speed while it is possible for collision to be averted by the action of the burdened vessel. To do so would be a grave fault, and, should collision occur, the privileged vessel would be held at fault. The burdened vessel could plead that she was going to obey the rules and keep clear, but was hampered in her movements by the illegal action of the other vessel.

Inland Rules

The crossing situation in the inland waters of the United States differs from the International Rules in that we have two additional sound signals.

1. The danger signal (Article 18, Rule 3).
2. One blast as authorized by the Pilot Rules to mean that the privileged vessel is holding her course and speed.

The privileged vessel will sound the one-blast signal when the vessels arrive within one-half mile of each other; it must be answered by the burdened vessel. This signal may be initiated by either vessel, but must be answered by the other.

Danger Signal in the Crossing Situation

Should either vessel fail to understand the intention of the other, then she shall immediately sound the danger signal. After sounding this signal and acknowledging that a dangerous situation exists, then both vessels must stop their engines and come to a complete understanding by means of whistle signals before proceeding.

As decided by the United States Supreme Court in the El Isleo case in 1939, any vessel will be held at fault for failure to stop after sounding a danger signal in the crossing situation in inland waters.

The two-blast signal by the burdened vessel in the crossing situation is sometimes used. Should the burdened vessel initiate this signal, she would be asking the privileged vessel to surrender the right of way. If the privileged vessel answers with two blasts, then she must take action to keep clear and allow the burdened vessel to pass. However, should collision follow, then both vessels will be held at fault for agreeing to a maneuver which has no legal sanction.

QUESTION

Does a naval vessel have the right of way over a commercial vessel at any time in the crossing situation?

ANSWER

No, the rules do not give any specific or special privilege to naval vessels in regard to taking the right of way. Therein rests the safety of the rules, they must be obeyed to the letter by all, large and small. Should, on the high seas, a vessel decide to surrender her right of way, it must be done in ample time and at such distance that risk of collision is absolutely avoided.

Running LIGHTS

Who When Where

BILGE CLUB of Los Angeles Harbor, Captain T. W. Peters, newly elected President, and his 1942 Board of Directors. Left to right: John Marshall, Sr., J. L. Smith, Lloyd Nelson, W. R. Rash, treasurer; Captain T. W. Peters, president; Al Boro, Secretary; T. W. Bucholz, Captain E. L. Ryan, Joseph M. Costello.

The Bilge Club

Captain Theo. W. Peters, newly-elected president of The Bilge Club of Los Angeles Harbor, announces that the Thirteenth Annual Barbecue and Golf Tournament (and Baseball Game, and Horse Shoe Tossing Contest; and Tug-of-War, and Tennis Matches) is all set for Saturday, June 20th, at Palos Verdes Country Club. Early indications of interest assure this year's famous maritime sports classic of success beyond all previous gatherings. Reservations are going faster than the proverbial hot-cakes.

Here is the staunch crew that'll take us out for a thrill-a-minute cruise:

W. H. "Billy" Wickersham, Honorary General Chairman.

"Cap" Theo. W. Peters, General Chairman.

Joe Costello, Assist. General Chairman.

Walter Richards, Sr., Chairman, Barbecue.

Charles Houghton, Chairman, Golf Handicap.

Jack Malseed, Chairman, Tournament.

Jim Craig, Chairman, Rules.

John Marshall, Chairman, Attendance.

John R. Eidom, Chairman, Reception.

Hal Bowen, Chairman, Prizes.

Carl Morabito, Chairman, Grounds.

Ed. Whittemore, Chairman, Baseball.

Jim Smith, Chairman, Program.

Floyd Nelson, Chairman, Entertainment.

Win Rash, Chairman, Finances.

T. W. Buckholz, Chairman, Tug-of-War.

May 6, 1942.

Pacific Marine Review,
500 Sansome Street,
San Francisco, California.

Dear Sirs:

Thank you very much for the publicity you gave us in your current edition of the Pacific Marine Review. The article written by Mr. Pratt was commendable for its accuracy and for the interesting manner in which it was written.

Thank you again for sending us the publicity from your magazine.

Very truly yours,

Hal Babbitt,
Editor, Bo's'n's Whist
Oregon Shipbuilding C

Captain T. W. Peters (left) recently elected President of the Bilge Club, is extended hearty best wishes by retiring president, John Eidom.

Navy "E" for Nordberg

"Well done!" said the Navy to Nordberg Manufacturing Co. in designating the engine-building organization as the recipient of the Navy "E" Award for production achievement.

In observance of the coveted honor, Nordberg held their official celebration at the Milwaukee plant headquarters on Friday, May 15th. Presentation of the Navy "E" burgee was made by Rear Admiral W. H. P. Blandy, U. S. N., Chief of the Bureau of Ordnance.

Acceptance of the award was entrusted to Robert E. Friend, president of Nordberg, while the raising of the burgee was handled by the Color Guard of the Navy. The Nordberg Glee Club chorused "Anchors Aweigh" on the program and "E" emblems were presented to the company's employees by Capt. H. A. Spanagel, U. S. N., attached to the U. S. Naval Gun Factory, Navy Yard at Washington, D. C.

Said Frank Knox, upon the occasion:

"As Secretary of the Navy, and as a fellow American, I congratulate you upon the achievement of this honor. And in so doing let me remind you that your company's contribution, together with that of other of our patriotic countrymen, is only the beginning. This production, increased manifold, must and will become the tide of Victory!"

ROBERT E. FRIEND

Robert E. Friend, speaking for the Nordberg personnel, stated:

"It is gratifying indeed that this high recognition has been awarded to us. We are grateful, too, that the Navy has said to us, 'WELL DONE!' The Award of the Navy 'E' burgee to our company marks a milestone in our history. This award for excellence in production and meritorious service is not lightly given and carries with it responsibilities to you and to me, to carry on the good work—yes, better and more of it! Never since the organization of the Nordberg Mfg. Co. in 1890 has our production been so large, and yet today so totally inadequate for the demands of our armed forces.

"I would like to personally congratulate and shake the hand of each one of you for the splendid showing we have thus far attained. Our Company is justly proud of your achievement. Each and every one of you should be equally proud of the honor that gives you the right to wear the coveted Navy 'E' button. Guard this right constantly, by living up to the traditions that go with it.

"Let us be thankful of this honor today, and reaffirm our pledge to the United States of America to produce more and more to back up the valiant boys in our Army and Navy on the fighting front.

"We solemnly pledge that we will not fail them!"

●

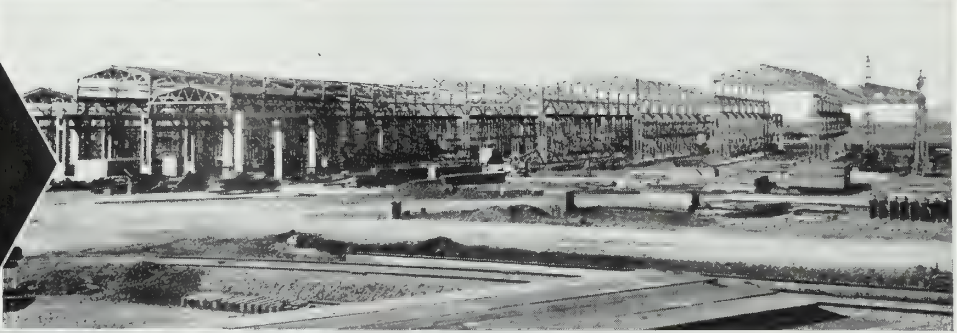
View of production rally held at the Sunnyvale plant of Joshua Hendy Ironworks on May 22, commemorating the superb record of Hendy employees in turning out Liberty engines.

Inset shows President Chas. E. Moore giving the key inspirational talk which highlighted the program.

NAVY SPEEDS YARD BUILDINGS *With* ENGINEERED *Timber*

Shipfitters Shop—248' x 440'—assembled and erected in

26 DAYS



Storehouse—150' x 902'—51 lines of timber trusses assembled and erected in

17 DAYS

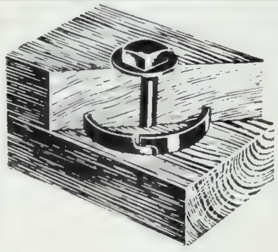
Shop Building—100' x 289'—18-60' trusses for center . . . beams and bays out to side. All erected in

3 DAYS

The Navy's order of the day includes timber trusses . . . short-span and long-span . . . for many building purposes. Typical are the three Buildings illustrated . . . lumber for which was prefabricated by the Henry Mill & Timber Company, Tacoma, Washington, after the structural framework had been designed by the Timber Engineering Company of California.

The TECO System of timber construction was employed throughout . . . to assure strength without waste; to save time, timber, hardware and costs.

If you are not familiar with the TECO method of using timber as an engineering material . . . be sure to write today for full details, illustrations, and designs.



TECO Ring Connectors spread the load on a timber joint over practically the entire cross-section of the wood.

TIMBER ENGINEERING COMPANY OF CALIFORNIA
85 Second Street, San Francisco, Cal.

TIMBER ENGINEERING COMPANY
1319 Eighteenth St., N.W., Washington, D. C.
Yeon Building, Portland, Oregon

CAPT. EDWARD M. MACAULEY

Joined together to hear Captain Edward M. Macauley, U. S. Maritime Commission, at the National Maritime Day luncheon, San Francisco Commercial Club are: (left to right) A. L. Wille, purchasing agent, Moore Dry Dock Co., Oakland; C. M. "Dad" Le Count, General Electric Co. marine specialist; R. C. Knight, King-Knight Co., San Francisco; R. H. Fenkhausen, plant engineer, Bethlehem Steel Co. Shipbuilding Division, San Francisco, and S. R. Mudge of the General Electric Company.

With the Propeller Clubs

The Propeller Club of the United States, through their various "Ports" observed National Maritime Day with programs held in all sections of the country.

At the Port of New York the 20th Anniversary Banquet was staged with Rear Admiral Howard L. Vickery, USN., vice chairman United States Maritime Commission, as guest-speaker. An abstract of Commissioner Vickery's inspirational talk appears in this issue of PACIFIC MARINE REVIEW.

At San Francisco the Propeller Club acted as co-sponsor of the observance held at the Commercial Club where a capacity audience came aboard to hear Capt. Edward Macauley, United States Maritime Commissioner, who came out from Washington, D. C., for the occasion.

Capt. Macauley was introduced by John Cushing, president of the American-Hawaiian Steamship Co. "It is significant that Capt. Macauley is addressing us today. His task with the Maritime Commission is to *man our vessels. . . . You tell 'em, Ed!"*

The guest-speaker traced the history of National Maritime Day from the historic voyage of the *Savannah*, May 22, 1819 . . . comparing the present-day supply lines which stretch around the world, to the period when this first steamship embarked on a transoceanic voyage under steam propulsion.

Speaking of the Maritime Commission, Capt. Macauley reminded us that the U. S. M. C. ordered 50 ships in 1937. In 1939, 100 ships were allocated. In 1940 . . . 200 and in 1941, 400. "We must build 800 bottoms in 1942 . . . and the goal for 1943 is 1500.

"The functions of the United States Maritime Commission are Building, Loading and Routing and Manning the Merchant Marine tonnage of the United States. It is important to point out that our War Shipping Administration directs *all* allied shipping at the present time, with the single exception of Great Britain, with which the WSA works in close cooperation. The WSA has the responsibility of Transportation of American Expeditionary Forces . . . the Supplying of Lend-lease equipment to the Allies . . . the Importation of raw materials for the American war effort . . . and at the same time develop commerce under our Good Neighbor policy.

"We must have ships!" declared the speaker. "Never have the stakes been so high. Not yet are we building enough vessels . . . *but we will!*

"The shipbuilding industry has been completely revolutionized with comparative strangers entering the shipbuilding profession, turning out many innovations and establishing tremendous new records. Picture a moving assembly line now under plan for a one-mile shipyard at New Orleans."

Speaking in high tribute to Coast shipbuilders, speaker Macauley asserted that the three top yards of the nation are located on the Pacific seaboard.

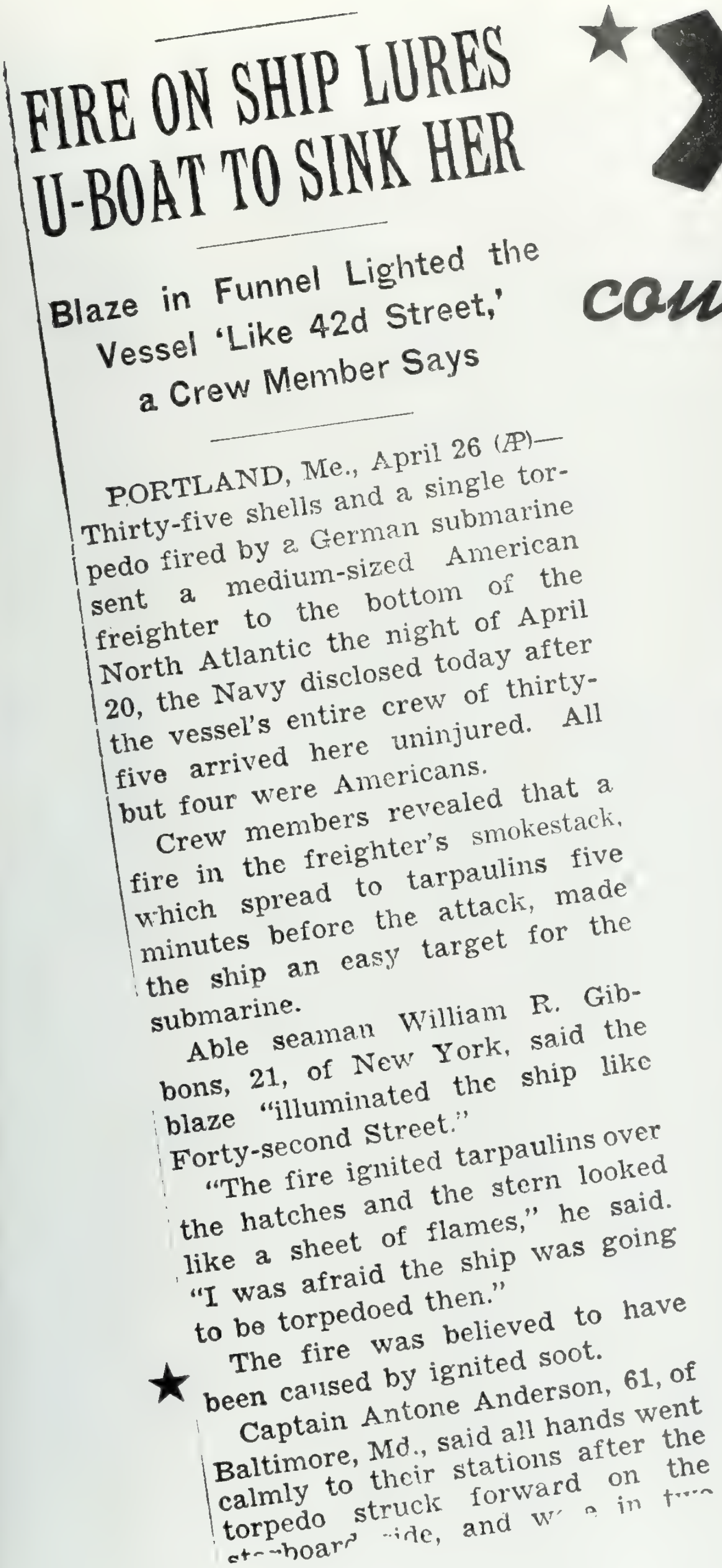
He also spoke in complimentary terms of the men who man our merchant ships, telling of the many instances where survivors of sinkings have lost no time to follow the tradition of the sea and *ship out again!*

The paramount objective, declared the speaker, "is to win the war!"

When the S. S. *John Page* was launched during the month of June at California Shipbuilding Corporation, members of the Propeller Club of the United States, Port of Los Angeles, turned out in record numbers to commemorate the event, with the wife of the president, Fred A. Hooper, acting as sponsor.

The *John Page* set the very fine record of 70 days from keel laying to the day she was christened. The launching was scheduled for midnight and was part of the Los Angeles observance of National Maritime Day.

A reception was held at the California Yacht Club in Wilmington under the auspices of the Port of Los Angeles Propellers.



FIRE ON SHIP LURES U-BOAT TO SINK HER

Blaze in Funnel Lighted the Vessel 'Like 42d Street,' a Crew Member Says

PORTLAND, Me., April 26 (AP)—Thirty-five shells and a single torpedo fired by a German submarine sent a medium-sized American freighter to the bottom of the North Atlantic the night of April 20, the Navy disclosed today after the vessel's entire crew of thirty-five arrived here uninjured. All but four were Americans.

Crew members revealed that a fire in the freighter's smokestack, which spread to tarpaulins five minutes before the attack, made the ship an easy target for the submarine.

Able seaman William R. Gibbons, 21, of New York, said the blaze "illuminated the ship like Forty-second Street."

"The fire ignited tarpaulins over the hatches and the stern looked like a sheet of flames," he said. "I was afraid the ship was going to be torpedoed then."

★ The fire was believed to have been caused by ignited soot.

Captain Antone Anderson, 61, of Baltimore, Md., said all hands went calmly to their stations after the torpedo struck forward on the starboard side, and w[illegible] in two

★ XZIT

could have Saved this Vessel!

XZIT

Eliminates Sparking and Stack firing

● XZIT

This scientific combination of chemicals eliminates soot, cracks off existing scale and prevents new scale from forming. Used and endorsed by leading Engineers in both Marine and Industrial fields. We will gladly demonstrate Xzit to you. Phone or write for full information.

● XZIT

Whether STEAM or DIESEL . . . for ships of all types . . . XZIT will bring new efficiency into your engine rooms.

XZIT SALES COMPANY

1031 Clinton Street, Hoboken, N. J.
Hoboken 3-1810

200 Davis Street, San Francisco
GArfield 8355

Port of Tacoma

The May meeting of the Propeller Club, Port of Tacoma, was held Tuesday evening, the 19th, at the University-Union Club, with the usual social hour at 6:30 P.M. and the dinner at 7:15.

Immediately following the dinner, Pres. Perry Moore introduced new members to the Club, after which the principal speaker of the evening, Lieut. Com. O. D. Adams, was introduced. Lieut. Adams is stationed at the Puget Sound Navy Yard at Bremerton, and his subject was "The Training Program in the Puget Sound Navy Yard."

It was the opinion of the members present that the Navy man's address was the finest ever given at any of our meetings. He spoke very plainly and forcibly and gave us a clear picture of the program as put on in this yard and of the many problems involved in the work because of the great number of employees. He mentioned the difficulties encountered but stated that these difficulties had been met successfully and the work was going along in fine style.

Immediately after Lieut. Commander Adams' very fine talk the meeting was adjourned by our President.

Chas C. Cramp,
Secretary

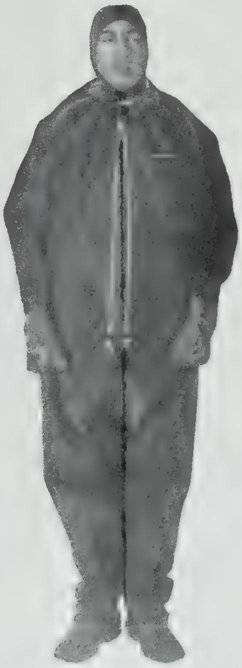
KEEP 'EM FLOATING

with the

"Overboard" Life Saving Suit

which incorporates

all the new protective features, including attached rubber gloves, recommended by the United States Coast Guard.



Other Features

Rubber-coated on strong fabric . . . One piece including hood, gloves and boots . . . Made in one large size to accommodate all wearers.

Requires only a fraction of a minute to put on. Special "Rope Pull" closure . . . Suit is pulled on over clothing and Shoes . . . Light Weight—Strong —Durable.

Approved by the United States Coast Guard

The Good Luck GOODALL RUBBER CO. INC. G R Co INC. Sign in Rubber

Goodall Rubber Company, Inc.

SEATTLE LOS ANGELES SAN FRANCISCO

Mills TRENTON, N. J. Established 1873

San Francisco Wartime Industry Classes Place Many

Since the National Defense training program was started by the San Francisco Public School Board, 5100 trainees have been placed into wartime industry, according to a statement of Joseph E. Clisham, Supervisor of San Francisco's National Defense Training Program.

"These placements are from the pre-employment courses only," stated Mr. Clisham, "since students in supplementary classes are already employed and are taking the supplementary training to increase their skills.

"The training program, in operation for the past year, has had a total enrollment of 18,305 in pre-employment and supplementary courses," he further stated. Of this total, 10,252 are enrolled in pre-employment courses and 8053 in supplementary courses.

The classes are in operation at 15 various locations in San Francisco, with the main training centers at the Samuel Gompers Trades School and the Shipbuilding School. At the latter site the school department has leased four floors of a modern factory-type building with over 100,000 square feet in floor area.

There are over 100 classes now devoted to shipbuilding and allied crafts, and three for advanced seamanship. The shipbuilding training courses include: shipfitting, marine drafting, marine electricity, marine sheet metal, marine blue print reading, arc welding and acetylene cutting, marine pipe fitting, and marine machine shop practice.

Life-Saving Suit Becomes Popular

The "Overboard" life-saving suit as produced by Goodall Rubber Company, Incorporated, and distributed through Goodall Rubber Co. of California, offices in Los Angeles, San Francisco and Seattle, is fast receiving recognition by Coast operators of seagoing tonnage.

Approved by the United States Coast Guard the Overboard features a rubber coating on strong fabric, a one-piece suit throughout, including hood, gloves and leaded boots.

The suits are made in one standard large size to avert confusion among wearers. The Goodall suit can be donned over ordinary clothes and shoes and it requires only a fraction of a minute to put on.

Special "rope pull" closure and air outlet in hood are also provided, and a toughness of material quality is claimed by the manufacturers for long and efficient use without tearing or pulling apart. Officially approved lifevests are ordinarily furnished with each Goodall suit.

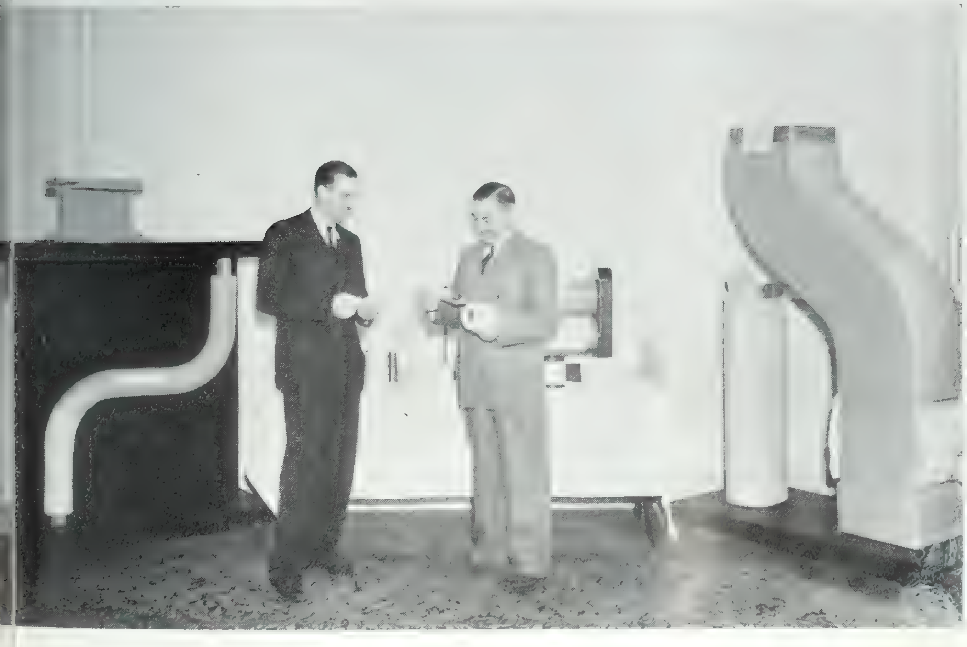
Propeller Annual

Arthur M. Tode, honorary president of the Propeller Club of the United States, is to be congratulated on the magnificent book which he and his associates produced, covering the 1941 proceedings of the American Merchant Marine Conference, dedicated to the theme Post-War Problems of the United States Maritime Fleet.

We understand all members of the various ports throughout the world have received personal copies of this very comprehensive volume. Those of us with Pacific Marine Review were particularly impressed with the excellent review of the Fifteenth Annual Convention of the Propeller Club, which was staged here in San Francisco last October. Generously illustrated this review strikes a nostalgic note for many of us who were in attendance at this memorable get-together of America's leading advocates of our Merchant Marine.

Reproduced in the pages of the booklet are the excellent talks which were delivered at the Conference

AN INTERESTING AND INFORMATIVE EXHIBIT by the Owens-Corning Fiberglas Corporation has been shown at various Pacific Coast ports during May. This display demonstrates the industrial and marine applications of Fiberglas as a textile, as electrical and heat insulation, and as a filtering medium. Our illustration shows one corner of the exhibit at the Palace Hotel, San Francisco, and features pipe and ventilation duct insulation, and samples of Fiberglas tape. The two gentlemen are A. E. Kincaid, Jr. (left), who is the engineer in charge of the exhibit, and J. V. Welsh, industrial and marine specialist in the application of Fiberglas. The exhibit opened in Long Beach May 5; showed at San Francisco May 11-15; at Portland, May 19-22; and at Seattle, May 25-28.



The Mariners

Another great program which brought out a fine attendance was staged by The Mariners Club of California on Wednesday noon, May 6, at the customary gathering place at 140 Battery Street in San Francisco, with President A. T. (Capt. Tom) Hunter wielding the gavel and presenting Pan-American Airways System's talkie-movie entitled "Mid Pacific Isles."

The film displayed an interesting travelogue of Wake, Midway and other stepping stones on the Airways system . . . many of which islands have been immortalized over the past six months by their heroic defense by United States forces.

Our president also introduced Capt. W. A. Cluthe, who delivered a short talk to the audience.

As we go to press, announcement has been received for the June meeting to be staged on Wednesday, June 3.

On The Job!

It's good to report that Frank De Pue, sales manager for Moore Dry Dock Company, is out of "dry dock" and back on the job after three weeks of recovering from an accident which happened while he was doing some estimating aboard a ship.

Your reporter joined the buoyant Frank at lunch and noticed no impairment of the appetite, nor of the trusty right arm. He still throws a mean pair of sixes!

Laidlaw Resigns

Neil S. Laidlaw, formerly operating manager for Swayne & Hoyt, who went to Washington for the Government, was considering an offer to become deputy associate director in charge of supervision of ports, for the Office of Defense Transportation in San Francisco. He has resigned his Washington job, and originally planned to go into a quicksilver mining operation.

Keep Posted!

Recent Development in Ship, Yard and Dock Equipment

Hydraulic Forming Press

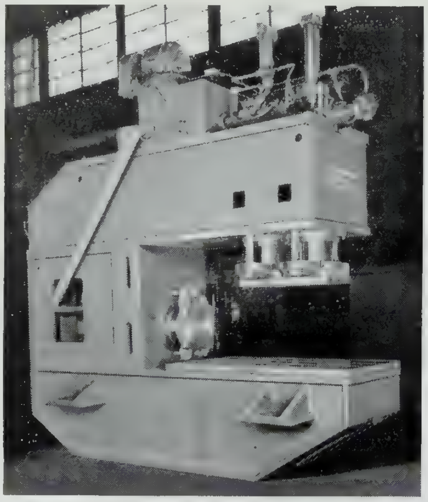
An important contribution to the hard-pressed shipbuilding, tank, truck, railroad car and other vital war industries, is the Beatty Hydraulic Forming and Flangling Press, illustrated here, recently introduced by the Beatty Machine & Manufacturing Company, Hammond, Indiana.

The machine is available in capacities up to 400 ton and features a new self-cooling hydraulic oil system which eliminates the need for cooling coils. This new feature, the manufacturer believes, will be welcome, for the new type oil circuit eliminates the old bugaboos of hot oil, or the potential danger that a water line will freeze or crack and allow water to enter the oil supply tank.

The hydraulic oil circuit is so arranged that the two vertical cylinders, each having a 200-ton capacity, can be tied together and operated as a single 400-ton press with operation by one lever control.

When used for flanging, the front cylinder advances to the work on the down stroke at the rate of 290 inches per minute and holds the work under pressure while the horizontal ram advances at the same rate. Under a full load, this ram presses at the rate of 21 inches per minute. All cylinders are controlled by manual valve lever.

Further specifications for the 400-ton model illustrated are as follows: maximum daylight of press 45 inches; stroke of cylinders 24 inches; depth of throat 66 inches from center of vertical cylinders to housings. The lower platen is 48 inches right to left; 88 inches front to back. These figures naturally vary with the size of the machine and can be changed to adapt the machine to the particular requirements of a job.



BEATTY 400-ton Hydraulic forming press.

Cooper-Bessemer Doubles Capacity

New buildings and equipment, which will practically double its productive capacity of diesel engines are reported being erected by The Cooper-Bessemer Corporation of Mount Vernon at its Grove City, Pa. plant.

Announcement of the new expansion was made by B. B. Williams, Cooper-Bessemer president and board chairman. The project is financed under a plant facilities contract authorized by the Bureau of Ships, Navy Department.

Principal element involved in the present project is construction of two new buildings which will vacate, for increased diesel engine production, space heretofore utilized for storage.

One of the new buildings containing four bays, two of which are 30 feet x 180 feet, one 40 feet x 280 feet, the other 40 feet x 140 feet, will be integral with the main manufacturing portion of the present plant. It will be used for storage of materials and for shipping.

"Our Grove City plant," said Mr. Williams, "draws its employees from a radius of 25 miles and the inability to obtain skilled workers as rapidly as they can be absorbed, places a ceiling on our program of expansion, at least, until this shortage is remedied."

The Cooper-Bessemer Corporation, one of the nation's oldest engine building concerns, having started a business in 1833, has been operating at full capacity for many months. Production of diesel engines for 1941 was much greater than for 1940.

Need for the company's products is attested by the great increase in workers. Today, the number of employes is 50 per cent over January, 1941.

A Sturdy Marine Thermometer

The new Taylor 5-inch industrial thermometer answers your question of what type thermometer to use in a limited space or on equipment subject to vibration.

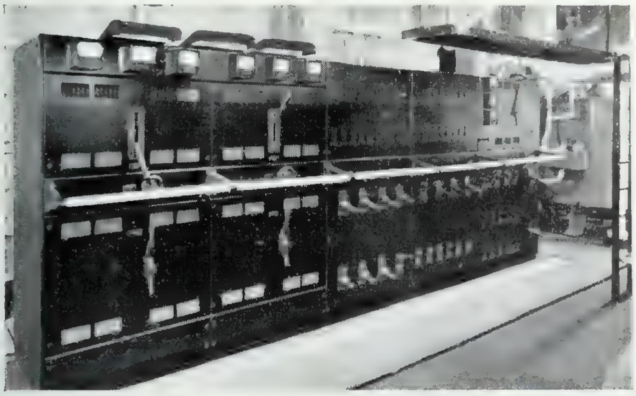
Designed for Navy use, this latest development of Taylor Instrument Companies, Rochester, New York, lends itself to diesel engines, air compressors, lubricating lines on motors, generators or reduction gears, small diameter brine, steam or water lines, and many other applications.

This new thermometer's one-piece construction eliminates separate front or top caps which might loosen under vibration; the sturdy glass front is held solidly in place by a string bezel, yet comes off easily when desired.

The Taylor Submarine Thermometer offers two types of separable socket connections, making it exceptionally easy to install and remove; choice of connection offered to suit the application. Available in straight, angle, right side angle, left side angle, or oblique stems to afford best angle position for any location.

IMMERSED IN AIR • ENCASED IN STEEL

BUILDERS OF ELECTRICAL SWITCHGEAR FOR *Marine* SERVICE



More than 40 years of specialized work in design and construction of marine switchgear. Each board is built as a unit; delivered ready to install. All circuit breakers are built-in, fully enclosed in steel.

I-T-E CIRCUIT BREAKER CO.
PHILADELPHIA, PA.

EDWARD RELIEF VALVES

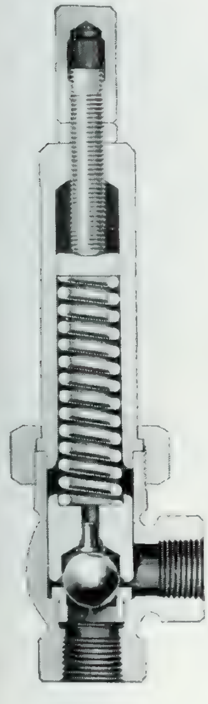


FIG. 141

Relieving pressures to 600 lb for auxiliary steam lines, pump housings, heat exchangers and unfired pressure vessels generally, handling steam, water, oil or vapor. Globe and angle, screwed ends, sizes to 2 in. Stainless steel balls reseat tightly without sticking. Vapor tight when relieving. Forged steel bodies, rolled steel bonnets, union rings and caps, and stainless steel seats. Springs carbon or alloy steel, depending upon service conditions.

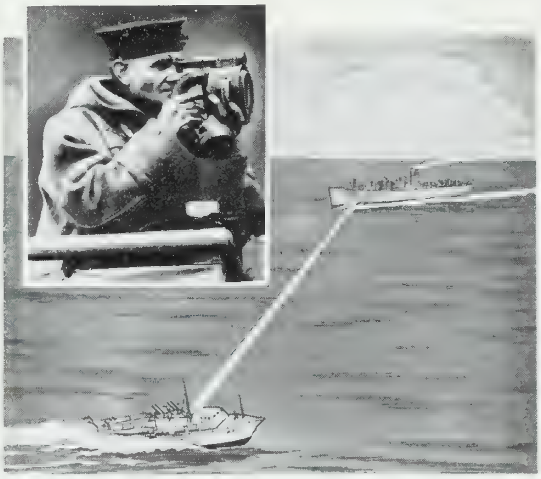
★ ★ ★ ★
THE
EDWARD
VALVE
& MFG. CO., INC.
East Chicago
Indiana

EDWARD MARINE VALVES

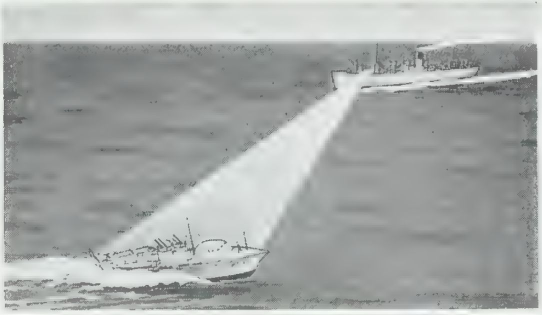
STEEL STOP • CHECK • FEED-LINE • BLOW-OFF • NON-RETURN VALVES • ETC

Keep 'em Signalling
SAFELY *At Sea!*

— Only a concentrated, long-range light beam (or flash) can safely maintain visual communications and escape detection by enemy forces



The Aldis Lamp light beam is so concentrated that its angle of deflection is only 6 degrees. The enemy can't read these safe, silent signals.



Wide - angle light beams of many types of lamps, lights and searchlights have varied marine uses, but for communications, they are unsafe and capable of detection by the enemy.

THE ALDIS DAYLIGHT SIGNAL LAMP

—Provides a highly concentrated light beam (or flash) carrying up to ten miles by day or night!

Tankers, freighters, transports, naval auxiliaries—all types of ocean-going ships must use silent, visual signaling as a wartime necessity whenever radio may be detected by the enemy.

The first requirement for maintaining emergency communications at sea, is the use of a strong, straight light beam. Wide-beam lights, lamps and searchlights are impractical and dangerous—it takes the highly concentrated, long-range light beam (and flash) of the Aldis Lamp to SAFELY do the job.

That's one major reason why you'll now find Aldis Lamps on United Nations shipping throughout the world. Throughout the War, it has been a bulwark of safety in protecting lives, cargoes and ships at sea. Write for Folder No. 15, today.

ARNESSEN ELECTRIC CO.
116 BROAD STREET • NEW YORK, N. Y.
Telephone: BOwling Green 9-8542

PART OF THE AUDIENCE at the Ansonia plant of American Brass Company as Navy "E" is awarded. Inset, Charles Finney, oldest employee at Waterbury plant, gets button from Commd. Thomas I. Bay.

American Brass Gets 3 Navy "Es"

With an unprecedented triple award, the United States Navy bestowed its cherished "E" for excellence pennant Wednesday, May 6, on three Connecticut plants of the American Brass Company.

It marked the first time in history that the Navy's symbol of production achievement was given in one day to three plants of one company.

The plants are located at Torrington, Waterbury and Ansonia, all in Connecticut, and, for the Navy, manufacture primarily copper-nickel condenser tubes for fighting ships, tubes for salt water lines in these ships and condenser headplates. A subsidiary of the Anaconda Copper Mining Company, the American Brass Company is the largest fabricator of copper products in the world.

Twelve thousand employees of the three plants shared in the award by receiving individual buttons bearing the Navy shield and letter "E" for excellence.

Presentation of the pennants was made by Captain Robert Henderson of the Navy.

Notables on the three platforms, including Connecticut's Governor Robert A. Hurley and Representative Joseph E. Talbot, were joined by 47 active employees, each of whom has seen 50 years or more of service with the company. Belonging to both groups was John A. Coe, chairman of the board, who has spent 57 years with the company. The group of 47 were given their "E" buttons by Commander Thomas J. Bay of the Navy.

Ceremonies at Torrington began at 10 a.m.; at Waterbury, at 1:45 p.m.; and at Ansonia, at 3:30 p.m. Mayors William A. Patten, Vincent A. Scully and Andrew F. Nolan, respectively, made the addresses of welcome. Each ceremony was restricted to 30 minutes so production would not be impaired.

Company representatives included Clark S. Judd, president of the American Brass Company, and three vice presidents, Elton S. Wayland, Arthur H. Quigley, and Roy S. Wildman.

Mr. Judd read a congratulatory letter from Secretary of the Navy Frank Knox. Representative Talbot acted as chairman at each of the three ceremonies. Mr. Cole made the address of acceptance.

The Navy "E" Award is a blue swallow-tail burgee bearing a Navy anchor and the letter "E". It is a symbol of "a good job well done."

Weld Spatter Eliminator

A new product, Acme Quality Industrial Finish Flash-Off No. 99, which is designed to eliminate weld spatters and the time cost of removing them, plus giving a stronger, smoother weld, has just been introduced by the Acme White Lead and Color Works of Detroit, Michigan.

The mechanic simply brushes, sprays, or wipes on Industrial Finish Flash-Off along the edges of the metal surfaces to be joined by the weld. Then when the welding is done, metal chips bounce or fall off instead of adhering to areas adjacent to the seam. This eliminates the necessity of grinding or scratching these chips off. The seam is smoother, and it is also stronger because Industrial Finish Flash-Off removes impurities from the weld, and, being an excellent conductor of electricity, helps prevent the weld arc from breaking.

An additional feature of the new product is its cleansing effect to the surface to which applied. It prevents pitting on galvanized or ungalvanized metal surfaces and permits immediate application of paint without cleaning operations other than wiping off.

The new product will be marketed in 55-gallon drums and 5-gallon cans.

Write to Acme White Lead and Color Works, Detroit, Michigan, Department FS-20 for further information.

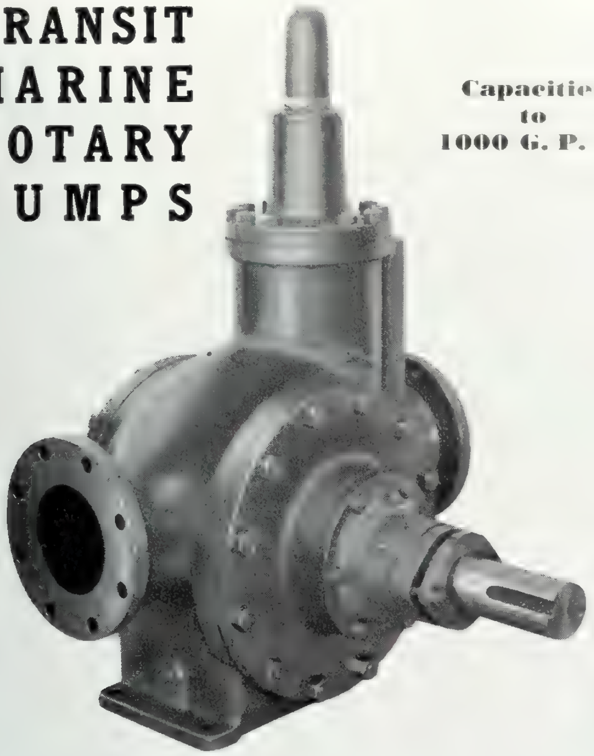
A New Corrosion Inhibitor

The D. W. Haering & Co., Inc., research laboratories in Chicago, announce development of a new corrosion inhibitor identified as ferri chrom glucosate. This new inhibitor is the ferric salt of quachrom glucosate and introduces a non-oxidizing chromium inhibitor for the first time. Ferri chrom glucosate controls corrosion in some applications in concentrations as low as two parts per million and may be employed in reducing equilibria and at low pH values for corrosion control.

Ferri chrom glucosate is a colloidal gel which may be used for film formation in process operations by dipping or spraying or may be incorporated in paints or lubricants for corrosion control.

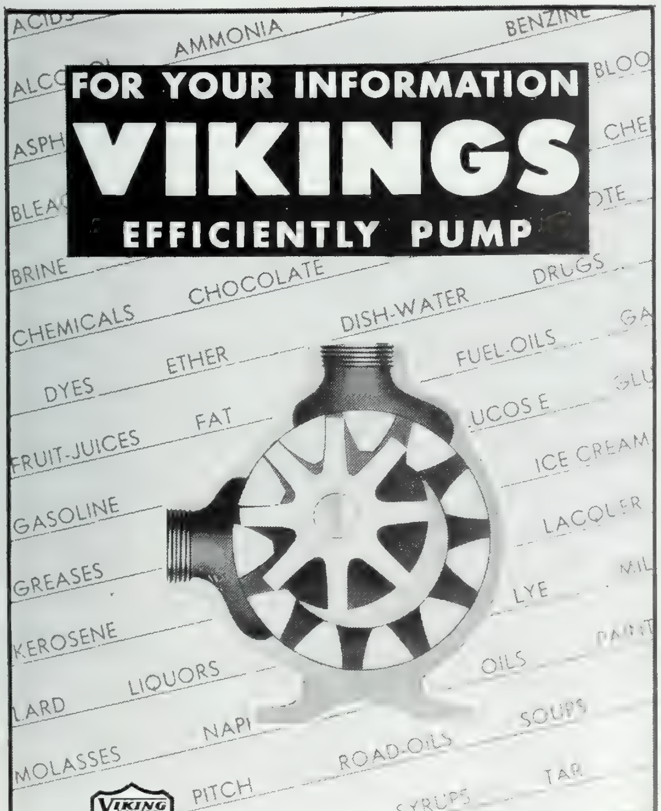
Ferri chrom glucosate contains very little chromium and is non-irritating to handle. Its use for corrosion applications may reduce chromium consumption for this purpose as much as two decimals, at the same time providing more effective control.

TRANSIT MARINE ROTARY PUMPS



Capacities
to
1000 G. P. M.

National Transit Pump & Machine Company
OIL CITY, PENNA.



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EFFICIENTLY PUMP

VIKING PUMPS FIRST IN AMERICA

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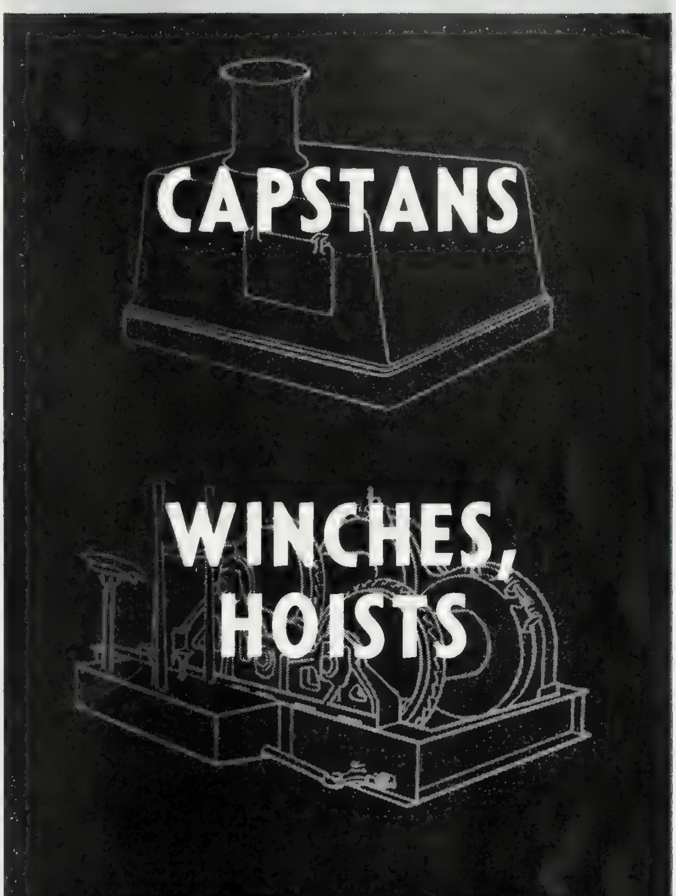
VIKING Pump COMPANY
CEDAR FALLS, IOWA

JAEGER



CAPSTANS

WINCHES, HOISTS

CENTRIFUGAL PUMPS

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Branches and Service in 100 Principal Cities

The Catalogs of Today Become the Technical Handbooks of Tomorrow

Duxseal, a four-page folder in two colors, published by Johns-Manville and describing the nature and uses of a non-hardening adhesive sealing and caulking compound suitable for a wide range of uses. Used like putty, just as it comes from the package, the compound, it is stated, sticks readily to any clean surface without slumping, flowing, or hardening in service. It is insoluble in water, unaffected by ordinary gases and condensates, and will not hurt the hands.

Duxseal was originally developed by Johns -Manville for the electric power and telephone companies to seal openings in ducts carrying electrical conductors. Its usefulness, however, says the company, led to its general adoption by electricians, maintenance engineers, mechanics, plumbers, and home owners for general utility service.

The material is black in color and weighs 100 pounds per cubic foot. It is furnished in 1-lb. and 5-lb. pugs, in cartons of 60 and 12 pugs, respectively.

Three additional sealing compounds, similar in appearance and general characteristics, but differing in consistency and certain individual properties, have also been added. Pakseal is designed for service where greater stiffness and rigidity are required; Transolseal for service requiring resistance to refined oils; and Nodrseal, for use in food storage and refrigerators.

"Modern Precision," an unusual publication just issued by Leeds & Northrup Company of Philadelphia, is of general interest to engineers, research scientists, executives and users

C. H. WHEELER

of Philadelphia

★

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. . . on this U. S. Navy
Submarine Tender

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C. H. WHEELER MANUFACTURING CO. . . . . Philadelphia, Pa.

San Francisco Representative
HALLORAN & PARDEE - Sharon Building

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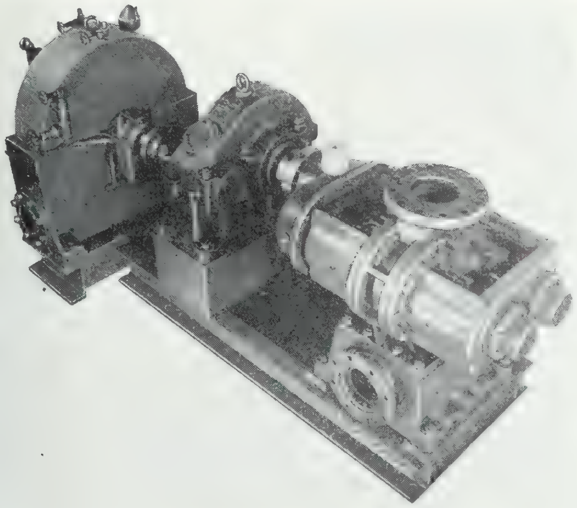
KINNEY
MARINE PUMPS



Kinney Model HQAC Pump with Independent Speed Reducer and Steam Turbine Drive.

Model HQAC Heliquad Pump

The Model HQAC was developed for oil tankers and barges. It handles all grades of cargoes from gasoline to heavy viscous liquids and ballast water.

In addition to the usual Kinney Heliquad advantages, the HQAC has two-direction thrust bearings—to prevent endwise movement of the shaft or rotors due to movement of the ship; and horizontal suction base with built-in strainer (connections can be made to either side).

The illustration shows the HQAC arranged for steam turbine drive. Motor, diesel, or gasoline engine can be used by connecting pump through a bulkhead to floating shaft coupling extended through stuffing box to driving unit. Independent herringbone speed reducer has important advantages, too, as they offer a wider selection of speeds and horsepowers; are manufactured by specialists in gear design and construction; and since they are independent, both reducer and pump are more easily accessible for inspection and repair. In general, sound engineering suggests purchase of speed reducer with pump for compact mounting.

Information about the Model HQAC or the several other models of Kinney pumps designed for marine service is available from the nearest office listed below.

KINNEY MANUFACTURING CO.
3554 WASHINGTON STREET BOSTON, MASS.

BRANCH OFFICES

NEW YORK
30 Church St.

CHICAGO
59 E. Van Buren St.

DALLAS
808 Santa Fe Bldg.

PHILADELPHIA
795 Commercial Trust Bldg.

LOS ANGELES
1333 Santa Fe Ave.

SAN FRANCISCO
55 New Montgomery St.

SEATTLE
1110 Second Ave.

Also for Victory — keep your plant going at full capacity. Avoid frequent shut-downs. Use packings, gaskets and oil seals which give long, dependable service.

THE GARLOCK PACKING CO.
PALMYRA, NEW YORK
SAN FRANCISCO LOS ANGELES
SEATTLE PORTLAND

of electrical instruments, controls and furnaces.

This pamphlet contains news of L&N instruments, controls and heat-treating methods, and of the jobs they are doing in industry, in research laboratories and in teaching and testing. An addition to other L&N literature, it supplements the regular catalogs, bulletins and circulars, which will continue to be issued as before.

"Modern Precision" has 16 pages, 10½" x 15⅜". It contains valuable information for a wide variety of industrial, educational and scientific fields.

Vulcalock Barrels and Drums: A new catalog section (9030-4-42) on its line of barrels and drums lined with rubber by the Vulcalock process has just been published by The B. F. Goodrich Company, and is available upon request. These barrels and drums are used for the safe, economical handling of corrosives. The catalog section describes the properties and limitations of the Vulcalock drums and barrels, with details of construction and uses.

CD Wide-Range Oil Burning System: A new Bulletin No. 107 has just been issued by the Peabody Engineering Corporation. It describes and explains the Peabody Constant Differential Wide-Range Oil Burning System, which provides a simple, positive and flexible control of combustion over a very wide range of capacity. When required, this flexibility may spread over ranges in excess of 50 to 1. Copies will be sent free on request.

Pedrick Service Manual. The Wilkening Manufacturing Co. of Philadelphia and Toronto, maker of Pedrick piston rings, has just issued a new and up-to-date manual on motor reconditioning, called the Pedrick Service Manual. It is the very latest in its field and is expected to render a valuable reference and educational service for the duration.

In its 60 pages will be found a most practical discussion and guide to the best accepted practices in general motor reconditioning, with special emphasis on piston ring installations. More than two-thirds of the book is devoted to a general discussion which is equally applicable to automotive, outboard and marine engines, small power plants and stationary engines, such as are frequently used in compressors and refrigerators.

The entire manual is generously illustrated with photographs, drawings and charts.

Anyone interested in having a copy should get in touch with his nearest Pedrick jobber, through whom the distribution of the new manual will be handled.

Another Veteran "Joins Up," an 8-page, two-color booklet, published by the United States Plywood Corporation and describing waterproof Molded Weldwood construction for water craft and airplanes. This publication is beautifully illustrated and the explanatory text gives a well-arranged wealth of data and fact about the use of this remarkable wood product.

Eubloc Oil Purifier, Form 1216-C-3-42-3M, a four-page, three-color bulletin published by the Sharples Corporation and describing their self-contained centrifugal purifying unit for diesel or lubricating oils.

This purifying unit comprises a Sharples Vapor-tite Super Centrifuge mounted on the same base with two direct-driven gear pumps. One pump feeds the dirty oil to the centrifuge, the other pump delivers the clean oil to the clean oil tank or to the system. An oil heater may be included if desired. When installed, the heater is under full thermostat control, and the entire unit is operated by a single push-button control with full overload protection. An overload on any motor or the heater immediately shuts down the entire unit.

The line includes five sizes, ranging in capacity from 35-100 ghp to 325-500 ghp.

The bulletin pictures and describes the unit and its details and lists specifications giving all essential dimensions and designed performance.

Tube-Turns' Sparks, the first issue of a 12-page quarterly, printed in black and red, which is newly projected by Tube-Turns, Inc., of Louisville, Kentucky.

In photographic and typographic layout, this book emphasizes the tremendous recent growth of welding in all the major industries. More power to "Sparks"; it promises much of interest and information to the marine pipe welder and fitter.

Compressed Air Pipe Friction, a chart for quickly determining the drop in pressure accompanying the flow of air or gas through pipes of known diameter and length, is being distributed by the De Laval Steam Turbine Co., Trenton, N. J. For a given rate of flow through a pipe of given diameter, the chart gives a friction factor, from which the pressure drop is readily calculated by simple multiplication and division, taking into account the temperature, the specific gravity, and the pressure. An auxiliary alignment chart provides for reducing pipes of different diameters to equivalent lengths of a single diameter in order to simplify the calculation for systems containing piping of various diameters.

Transite Walls: A two-color, four-page bulletin (Form TR-29A) published by Johns-Manville.

The speedy erection of offices in industrial plants is the subject of this new illustrated folder. Directed to plant operators faced with the problem of providing additional offices quickly, the folder points out the versatility of Transite movable asbestos walls, which, it states, can make possible, in many cases, the complete construction of completely finished new offices over night.

Load Center Power Circuits, an eight-page publication (GEA-3759) recently issued by General Electric, which gives information to help in the selection of the proper arrangement of load-center distribution system to fit individual requirements of industrial plants, shipyards, naval and military projects, and commercial buildings. Described in the bulletin are the characteristics of the four load-center system basic circuit arrangements—the simple radial circuit, the primary selective circuit, the secondary selective circuit, and the secondary network arrangement.

RECENT BOOKS

How to Draw Ships, by Peter Anson; 640 pages, 5½" x 7"; 79 drawings; published by The Studio Publications, Inc., 381 Fourth Ave., New York. Price $1.00 net.

This is a British book, one of a "How to Draw" series, compiled for and published by The Studio Ltd. of London and The Studio Publications,

HARDWOODS GENUINE WHITE OAK IS AVAILABLE in BENDING OAK · PLANK · TIMBERS

We have ample stocks reserved NOW for all Government boats.
We are prepared to supply your requirements on time.
We have seventy years of experience behind us.

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HARDWOOD HEADQUARTERS SINCE 1872

500 HIGH ST.
OAKLAND, CALIF.

PAUL BLAZER . . . Ashland Oil & Refining Company's new river tow boat, designed and built by the Calumet Shipyard and Dry Dock Company, Chicago, Illinois, is powered by a pair of Superior 8-cylinder, 14½" x 20" Diesels, each rated 800 H.P. at 300 r.p.m.

The ability to dependably and economically render continuous heavy duty service under all operating conditions has established a position of leadership for Superior Diesel Engines in the marine field.

Superior Diesel Engines are the product of an organization which has devoted itself exclusively to the manufacture of engines for over fifty years.

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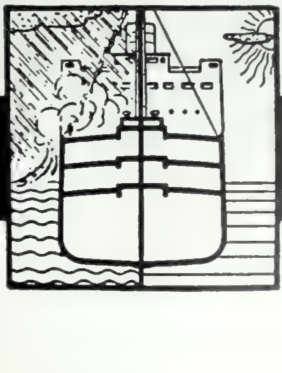
SALES OFFICES: Springfield, Ohio; Philadelphia, Penna.; New York, N. Y.; Los Angeles, Calif.; Jacksonville, Fla.; Houston, Texas; St. Louis, Mo.; Fort Worth, Texas; Tulsa, Okla.; Boston, Mass. FACTORY: Springfield, Ohio



CARGOCAIRE

Prevents Sweat Damage

CARGOCAIRE ENGINEERING CORP.
HEAD OFFICE - 525 CENTRAL BUILDING, SEATTLE, WASH.
NEW YORK OFFICE - 75 WEST ST., NEW YORK, N. Y.

Inc., of New York. It is largely made up of drawings by the author, which progress from a simple rowboat through all types of sail and power craft up to the latest passenger liners and warships. The text makes a few simple suggestions on methods by which the reader may improve his sketching ability; a very useful and interesting handbook for the amateur sketcher who "loves to draw ships."

Open Fire, by Alec Hudson; 290 pages, 5½" x 8"; bound in light blue buckram, with dark blue stampings; published by the Macmillan Company, New York. Price $2.50 net.

This is a collection of four of the most noted submarine tales of the author. These stories, "Battle Wagons," "Enemy Sighted," "Rendezvous," and "Night Action," have each appeared either as a separate volume or as a magazine article, or in both forms.

Alec Hudson is the pseudonym used by W. J. Holmes, a U. S. Naval officer who has developed a peculiar flair for describing the life in and the fighting actions of submarines. The reader seems to live through the tense moments when the difference of a split hair in decisions may mean:

Victory and life and distinguished service medals; or darkness, slow torturing death, and oblivion. A very interesting group of tales, very well told.

Lloyd's Register of American Yachts—1942, the 39th annual edition of the standard book on American yachts; published by Lloyd's Register of Shipping at New York. Blue and gold binding, $14.00; yacht canvas, $12.00.

Just threescore and ten years ago, the first American Yacht Register made its debut—"Fox's Yachting Annual"—a dainty, diminutive booklet of but sixty pages, 4" x 7", in blue cloth and gold. The publisher, Edward Fox, was a yacht broker, presumably the first in New York. Situated at No. 83 Nassau Street, he "bought and sold on commission fast, commodious and handsomely fitted schooner and sloop yachts."

This book listed 401 sailing yachts—schooners, sloops and cat boats—with 24 yacht clubs.

The venture failed, but two years later "The Commodore's Signal Book and Yachtsman's Vade Mecum," published by Thomas Manning, and "The American Yacht List," published by Niels Olsen, steward of the New York Yacht Club, made their appearance.

After the death of Thomas Manning this volume was discontinued and Lloyd's Register of Shipping, which had published "Lloyd's Register of British Yachts" since 1878, was requested by American yachtsmen to undertake the printing of an American Register.

The first issue appeared in 1903 under the title of "Lloyd's Register of American Yachts," retaining the familiar oblong size of most of the early books. In 1906, changed conditions in yachting, largely due to the introduction of the internal combustion engine, necessitated a radical change and the page was enlarged to 7½" x 9½". The division into power and sail was discontinued, owing to the growing number of auxiliary craft, the yachts, now numbering 7112, being entered in simple alphabetical order.

Navy "E" Award To Farrell-Birmingham

In recognition of excellence in the production of gear drives for Navy ships, the three plants of Farrell-Birmingham Company, Inc., at Ansonia and Derby, Conn., and Buffalo, N. Y., have been awarded the "E," traditional Navy symbol for a job well done.

Presentation of the award was made by Rear Admiral Henry A. Wiley, U. S. N. (Retired), chairman of the Navy board for production awards, and was accepted on behalf of the company by Mr. A. G. Kessler, vice president and general manager of the Buffalo plant. On behalf of all employees, William Shea, veteran employee of 62 years' service, received the Navy "E" lapel emblem from Commander Robert S. Smith, Jr., U. S. N.

Shown in our illustration with the Navy "E" burgee at the presentation ceremonies on May 10, are, left to right: A. G. Kessler, Captain L. F. Small, Karr Parker, president of Buffalo Chamber of Commerce and chairman of the presentation ceremonies; C. Wayland Brooks, United States Senator from Illinois, principal speaker of the occasion; Commander Robert S. Smith, Jr., Lieutenant Commander William J. Connors, Captain Frederick L. Oliver, inspector of naval material, Pittsburgh district; William Shea, and Rear Admiral Henry A. Wiley.

Photoelectric Intrusion Protection Systems

Photoswitch Inc. announce an addition to their line of photoelectric protective systems, Type A28L Control for outdoor and indoor use over very long ranges.

The light source projects a practically invisible light beam for distances of 350 to 700 feet, and it is possible to completely surround power plants, defense factories, and other vital areas. If the light beam is broken by intruders or saboteurs, the photoelectric control contacts close, thereby sounding alarms, operating a central station system, turning on flood lights, and closing gates or other protective devices.

The control is provided with a latching unit including a push button station, which may be located in the gate house, office, or other convenient point.

The Photoswitch is unaffected by changes in local light, and is designed to operate 24 hours a day. The relay contacts are pure silver and will handle 15 amps. ac and 8 amps. dc.

College Machine Shop Converted To War Factory

Purdue University's student machine shops at Lafayette, Ind., customarily used only for routine practice work, recently have been converted into a war production factory under terms of a Westinghouse subcontract, according to R. A. McCarty, vice president in charge of the company's subcontracting program.

More than 275 engineering students enrolled in the shop course are working part-time on the subcontract. Together their production is the equivalent of a 75-man machine shop working full time on war materials.

At Lafayette, Purdue's president, Edward C. Elliott, announced the University machine shops had been set up on a "strictly production basis," with students temporarily becoming workmen during the portion of each day they are in the shop, and instructors becoming shop foremen.

Special stock material required for some parts being made by Purdue students has been supplied by Westinghouse.

American Shipyards

DIRECTORY . . . of the Plants and The Men Building Ships for Victory

Pacific Coast

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Vice President and Manager: L. R. Hussa.
Naval Architect: C. F. Butler.
Purchasing Agent: H. W. Erren.

ALLIED ENGINE & SHIPBUILDING CORP.
4001 So. Harvard Blvd.
Los Angeles, Calif.

ANDERSON & CHRISTOFANI
Innes & Griffiths Sts.
San Francisco, Calif.

ASSOCIATED SHIPBUILDERS
2727-16th Ave., S. W.
Seattle, Wash.
General Manager: G. H. Stebbins.
Chief Engineer: C. W. Johnson.
Purchasing Agent: E. B. Devener.

ASTORIA MARINE CONSTRUCTION CO.
Astoria, Ore.
President: Joseph M. Dyer.
Vice President and Manager: G. J. McClean.
Naval Architect: Joseph M. Dyer.
Chief Engineer: H. M. Dole.
Purchasing Agent: Richard Schroeder.

BALLARD MARINE RAILWAY CO.
5351-24th, N. W.
Seattle, Washington
President: W. G. Fryberg.
Vice President: E. C. Smith.
Manager: H. F. Fryberg.

BASALT ROCK CO., INC.
Shipbuilding Yard—Napa, Calif.
President: A. G. Streblow.
Vice President: Walter Fawcett.
Manager: A. G. Streblow.
Naval Architect: D. McCall.
Chief Engineer: E. Godsil.
Purchasing Agent: J. E. Godley.

BEAVER BOAT WORKS
Portland, Ore.

W. A. BECHTEL CO.
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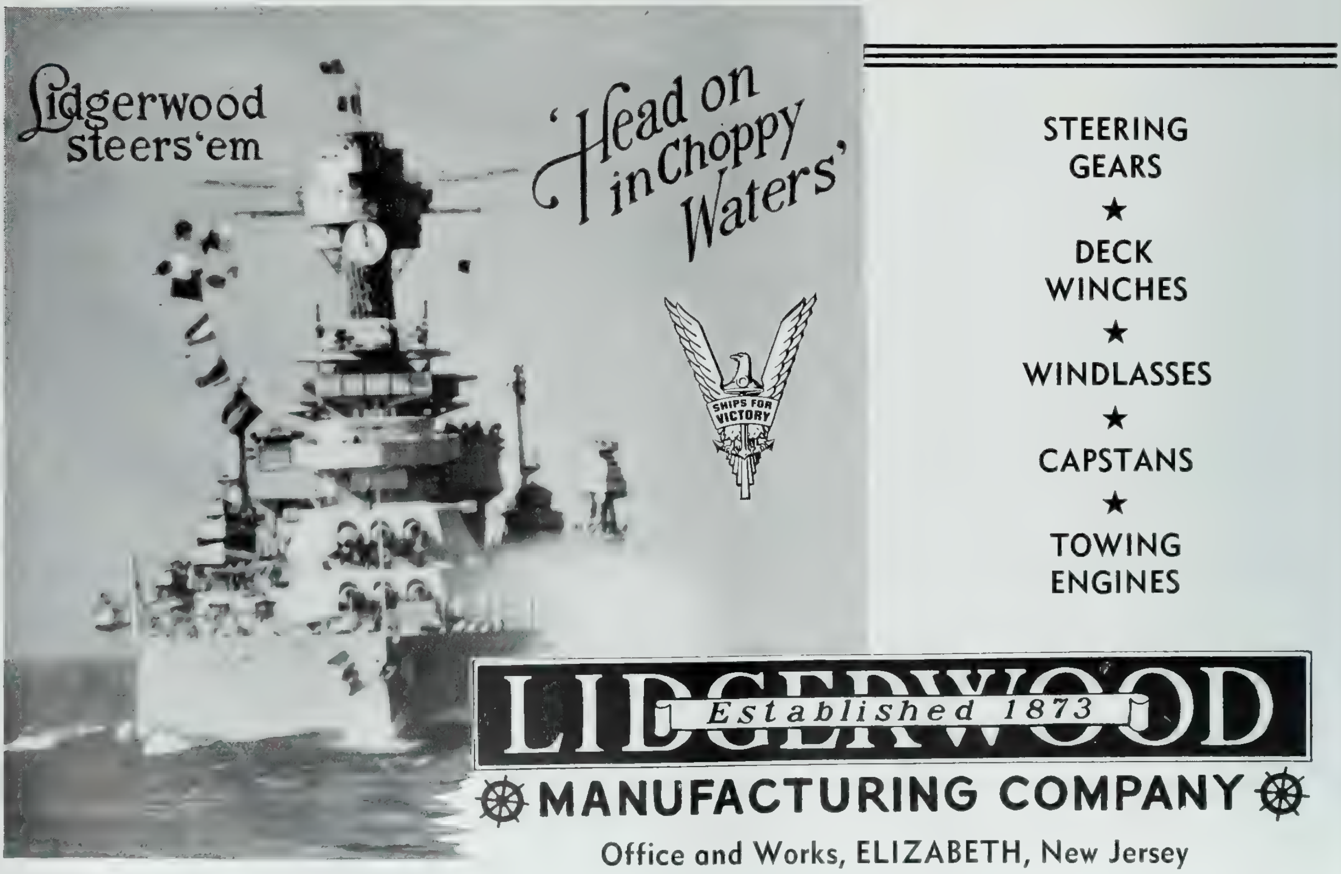

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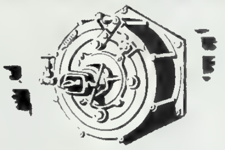

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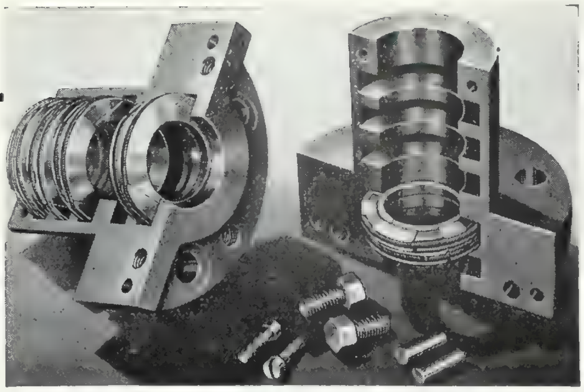

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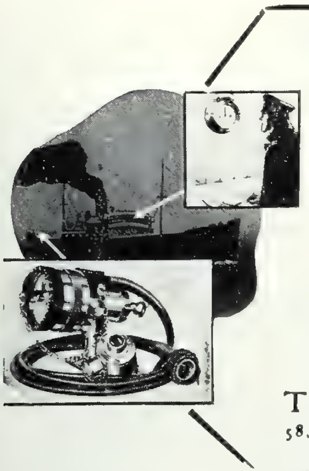

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July 1942

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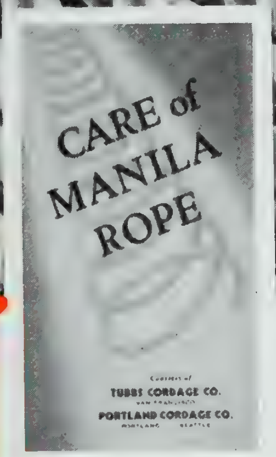

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Pacific Marine Review

Editorial Comment

America's Maritime Future

AMERICA IS DRIVING heart and soul and body toward a shipbuilding goal that will give her the largest fleet of new cargo vessels that was ever assembled under one government. The object of this drive is, of course, to win the war.

In the organization set up to operate this fleet are being absorbed most of the ship operating brains of all the American ship operating firms.

The war-winning effort is taking our ships to every corner of the globe and to many ports that heretofore have not been regular ports of call for American steamships.

As world economy is being molded in this war, it appears more imperative than ever before that the American merchant marine be put on a strong, stable, continuing basis so that American influence be felt in world trade and world economy.

Since practically all the shipping brains of America are now working in one operating organization and for one common purpose, it would seem to be the logical time for the formulation of some unified policies for post-war organization.

Careful study of the problems involved and sensible development of comprehensive policies consummated at the present time should go far toward preventing chaos and providing orderly progress after the war is over.

Our British allies have recently formed a national body known as the General Council of British Shipping, which is charged with such study and consequent policy formulation.

American merchant marine interests should do likewise. We have many powerful maritime interests in the Federal Government and in industry. A representative national body should be formed on which each of these interests should have representation. The American merchant marine has always been handicapped in dealing with its friends and foes alike by the lack of a unified policy—a united voice.

Now, the opportunity is open to get unity and to plan as a united body with service to international trade as our unified goal.

Let's grasp this opportunity and create a real AMERICAN MERCHANT MARINE in the New World Trade.

Cost of Injuries

by BYRON O. PICKARD

Manager, Marine Associations Accident Prevention Bureau

The average direct cost (including only compensation, medical and hospital expenses) of a reported injury to a seaman on Pacific American ships is $138.09, according to the data compiled by the Accident Prevention Bureau of the Waterfront Employers Association.

For the past three years the Bureau has received reports of injuries to seagoing personnel, the medical, compensation, and miscellaneous direct costs of these injuries, and the annual payroll (straight time only; that is, no overtime included) of each vessel from four companies and has similar data from a fifth company covering 1941.

The figures presented here are based on a study of 4526 injuries, the direct cost of which totals $625,000. In many instances estimates are given for cases open at the end of the reporting period.

TABLE 1. *Total Number of Injuries Reported*

	Deck	*Engine*	*Steward*	*Total*
Passenger	381	385	961	1727
Freighter	1359	1005	435	2799
Total	1740	1390	1396	4526

TABLE 2. *Cost Per Injury*

Passenger	$211.17	$105.50	$76.85	$112.87
Freighter	161.66	117.53	212.12	153.65
Average	$172.50	$114.20	$119.00	$138.09

TABLE 3. *Cost of Injuries Per $100 Payroll*

Passenger	$2.16	$1.02	$0.89	$1.24
Freighter	2.79	1.80	3.91	2.56
Average	$2.59	$1.55	$1.56	$1.9[illegible]

Technical Officers Needed for Navy

New opportunities for civilians to become commissioned naval officers in technical and scientific branches of the service were announced recently by the Office of Naval Officer Procurement.

Special emphasis was placed on the immediate need for men holding degrees in electrical and mechanical engineering, and for radio physicists and radio engineers.

Age brackets in most of the technical fields are 19 to 50.

Following are some of the classifications open:

1. **Engineering Officers**—Officers in this field will be assigned to duty in connection with aircraft overhaul and maintenance with aircraft squadrons, carriers, or ashore at air stations and training bases.

2. **Radar Maintenance Engineers**—Duties will consist of design, inspection, installation, and maintenance of Radar equipment.

3. **Civil Engineers**—Officers will be assigned to duties in connection with development and construction of shore bases in the United States or abroad. The need here is for men over 27.

4. **Radar Plot Officers**—This is a special classification of officers whose specific billet will be on board ships carrying aircraft, plotting aerial operations. Need here is for men from 21 to 38.

Men whose education qualifies them for these types of work may obtain complete information by mail to or a personal call on the nearest headquarters of the Office of Naval Officer Procurement. In some instances the requirement for a college degree will be waived if the individual has had practical experience adequate to compensate for the lack.

Maps Wanted by Army Engineers

Maps are munitions of war, and the Foreign Map Section of the Corps of Engineers, U. S. Army, is undertaking to extend its comprehensive files. It seeks maps and map information of all countries and areas of the world not within the continental limits of the United States.

Companies or individuals who have such maps or aerial photographs are requested to inform the San Francisco Unit, Foreign Map Section, Room 546, 74 New Montgomery Street, San Francisco. Such maps, if desired for duplication, will be receipted for and returned within a few days.

Knowledge is sought also of the availability of such maps in the possession of those who are unlikely to learn through channels like this of the need and value to the Government of such data.

At Midnight

RAIN-STREAKED STEEL reflects the lights at "Oregonship" yard as S. S. Washington Irving, S. S. James Fenimore Cooper, and S. S. Thomas Bailey Aldrich await triple Maritime Day launching.

Ships to Win the War

by H. Gerrish Smith

President, National Council American Shipbuilders

SUPERIMPOSED ON the enormous naval program, started in 1940 and greatly increased in 1941 and 1942, is the President's call for 23 million deadweight tons of merchant shipping by the end of 1943. Twenty-three million deadweight tons of ships is equal to about one-quarter of the entire world tonnage of merchant ships in existence at the outbreak of the war.

Deliveries of both naval and merchant vessels are in most instances well ahead of scheduled dates and have been so announced repeatedly by both the Navy Department and the Maritime Commission. More tonnage of merchant vessels was delivered in the first four months of 1942 than in the entire year 1941. The rate of merchant ship production at the present time will produce more ships in a year than was produced by the entire world in any one year since the completion of the first World War program and this tempo is rapidly increasing. The time from keel laying to launching, and from launching to delivery, is being continually reduced. Not less than 50 ships have been completed in shipyards, the construction of which did not start until fourteen months ago. These ships are now in active war service.

The accomplishments to date and the task ahead are a joint responsibility of Government, industry and labor. Government has carried out its part of the program with much foresight, in the construction of both naval and merchant vessels. It has: made use of existing designs wherever practicable; placed contracts for as large a number as practicable of ships of the same design; placed contracts wherever practicable with existing organizations; developed shipyards in new localities, to be operated in part or in whole by existing organizations; and decentralized its activities to a large extent to expedite inspection and to effect the prompt settlement of the many detailed problems that arise.

Industry has been faced with the necessity for great expansions, not only of shipyards and ship repair yards, but of allied marine industries throughout the United States. The naval program has grown continuously since its inauguration in 1940. The merchant shipping emergency program has expanded 1100 per cent since February, 1941. This program has required the building of many new shipyards and facilities for manufacturing ship power plants and ship equipment. When completed, the shipbuilding facilities of the country will, it is believed, be in excess of the capacity of the steel mills and that of some other industries to provide the materials for shipbuilding.

Considerable delays in the delivery of material have occurred. These delays are being overcome as new facilities come into operation. The key to the shipbuilding program is the production and delivery of material and equipment to the shipbuilder.

Shipbuilding is given the highest priority rating. Great quantities of the same kinds of material, however, are required in the construction of airplanes, tanks, machine tools, etc., which are likewise given the same degree of priority, so that a study of priorities within priorities is essential if delays are to be avoided. Some delays in shipbuilding have occurred due to this situation.

Every state and every community in the country has a responsibility in the production of material and equipment used in shipbuilding. Within a few miles of where we now are—the city of Cincinnati—thousands of workmen are engaged in the production of materials needed in the shipbuilding effort.

Employment in the building of ships is about equally divided between the production of materials and equipment for shipbuilding and in the shipyards themselves. At the beginning of 1940, total employment in private shipyards, ship repair yards and Government navy yards was about 90,000; at the present time it is about 650,000, and is constantly increasing, and at the peak of production will be over a million.

Experienced shipbuilding labor did not exist to meet this tremendously increased demand. A large part of it has been developed through intensive training which has been carried on not only by industry itself but with the cooperation of Government and labor.

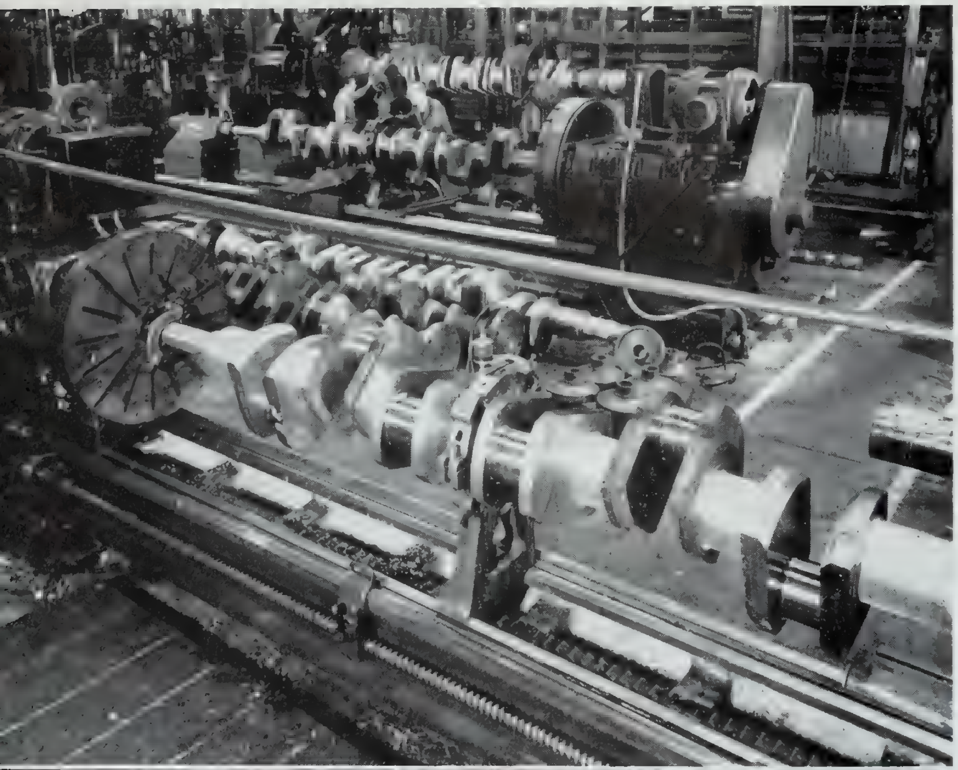
The rank and file of labor has done a good job, but it can do better.

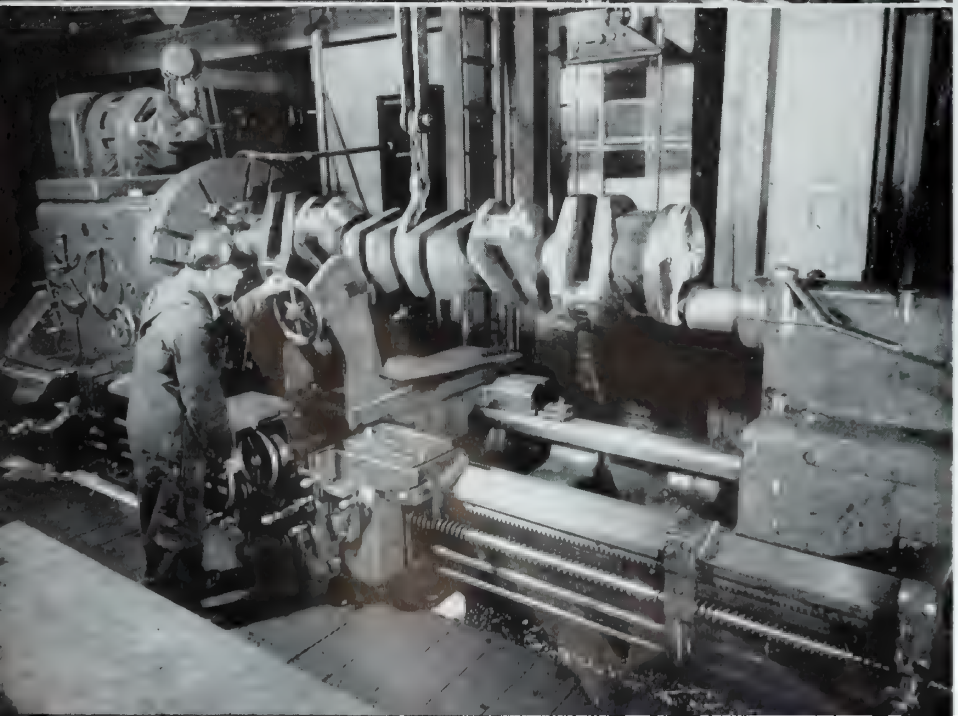
The tempo of launchings and deliveries is rapidly increasing and the shipbuilding and ship repairing facilities are still being enormously increased to meet the demand for ships. All water-bounded sections of the country are engaged in shipbuilding. The shipyards on the great rivers are now actively engaged in building both naval and commercial vessels of types never before undertaken in river shipyards.

At the present time, the ship repair industry has extensive repair and conversion work for the Navy and the repair and conversion of foreign vessels in our harbors under the Lease-Lend Act, in addition to its normal functions. A vessel promptly repaired and put back into service is just as effective as a new vessel, and the industry has performed effective and expeditious service to this end.

Marine Diesel

Photos courtesy of Photographic Department of Enterprise Engine and Foundry Company





THE ENTERPRISE Engine and Foundry Company of San Francisco has long been noted for its heavy-duty, medium-speed diesel engine applications in Pacific Coast work boats. During the past five years, this reputation and experience has led to considerable expansion and to a modernization of plant and product, bringing both very much up to date. As a result, Enterprise was ready to start immediately on large orders arising from the huge war demands for diesel engines to drive auxiliary naval craft, and, at the same time, ready to undertake the large plant expansion so that the orders could be rapidly filled.

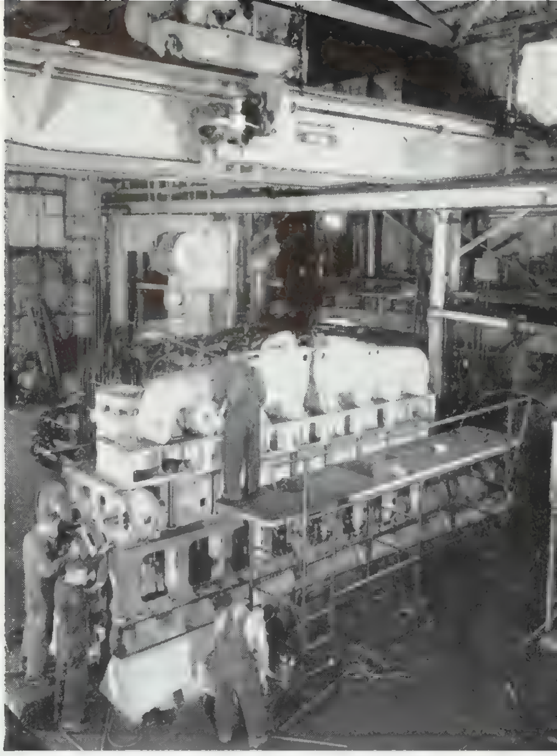
The illustrations herewith show interiors of the Enterprise plant and some of the special tools for machining diesel engine parts. In the production of internal combustion engines, the foundry is of primary importance. Enterprise foundry has had an excellent reputation for two generations and is now equipped to take care of the largest castings required by the Enterprise diesel line. The illustration at the head of this page shows two large ladles in this foundry pouring molten iron to form the eight-ton casting for the bed plate of an eight-cylinder En-

UPPER: SCENE IN FOUNDRY. Two large ladles pouring 8-ton bed plate for an eight-cylinder engine.

CENTER: MAIN BAY OF MACHINE SHOP featuring three large lathes, each machining a crank shaft.

LOWER: CLOSE-UP of a lathe turning crank pins and a large crank shaft. Note offset fixture at tail stock end of shaft.

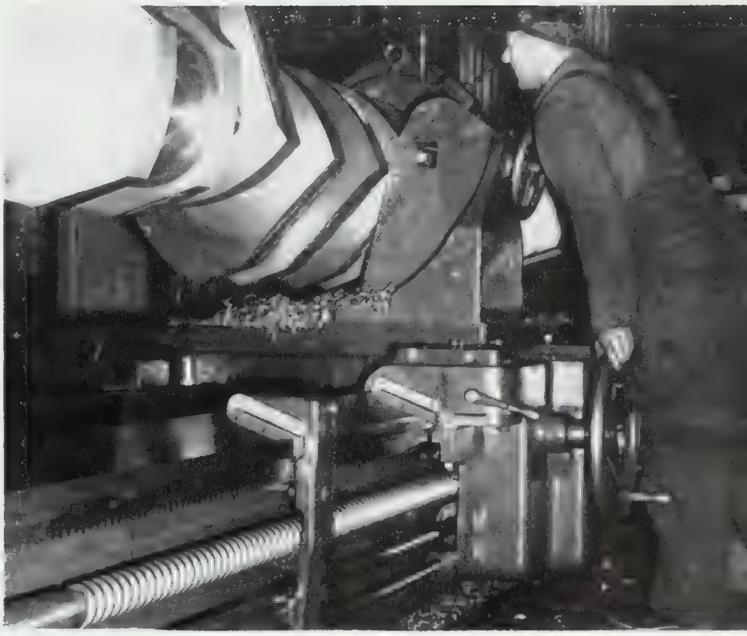
ngine Production



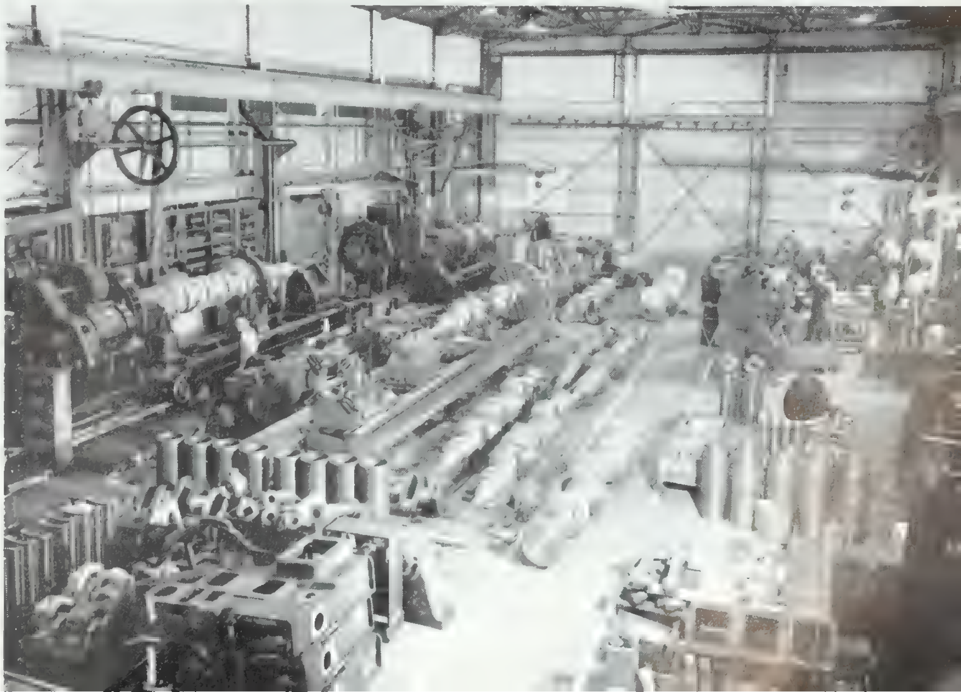
terprise diesel. At the head of the facing page is shown one of these eight-cylinder engines on the erecting shop floor.

In the main bay of the machine shop are installed a number of large lathes. These have a capacity up to 56-inch swing and 44-foot bed length. In two of our illustrations a 56-inch swing by 38-foot bed Le Blond lathe is shown finishing the crank pins on the crank shaft for a six-cylinder diesel engine. This shaft is 17 feet long and has eight-inch diameter crank pins and nine-inch diameter journals. Note the special offset fixture clamped to the shaft end and centered on the tail stock. This fixture has three center countersinks exactly 120° apart on a circle of exactly the same radius as that of the crank pin centers. It is clamped on the end of the crank shaft with these centers positioned to align exactly to the axes of corresponding crank pins. At the other end of the crank shaft, the coupling flange is mounted against the face plate in a fixture equipped with means for setting it in the three positions corresponding to the three centers in the offset fixture at the tail stock end. The close-up of the operator at the carriage of this lathe features an interesting design of tool post

UPPER RIGHT: EIGHT-cylinder engine in process of erection on shop floor.



RIGHT: CLOSE-UP of carriage of lathe showing design of tool post used in machining crank pins and crank checks.



GENERAL VIEW OF MAIN BAY in machine shop. Crank shafts and many other parts in process are neatly piled on floor ready for machining.

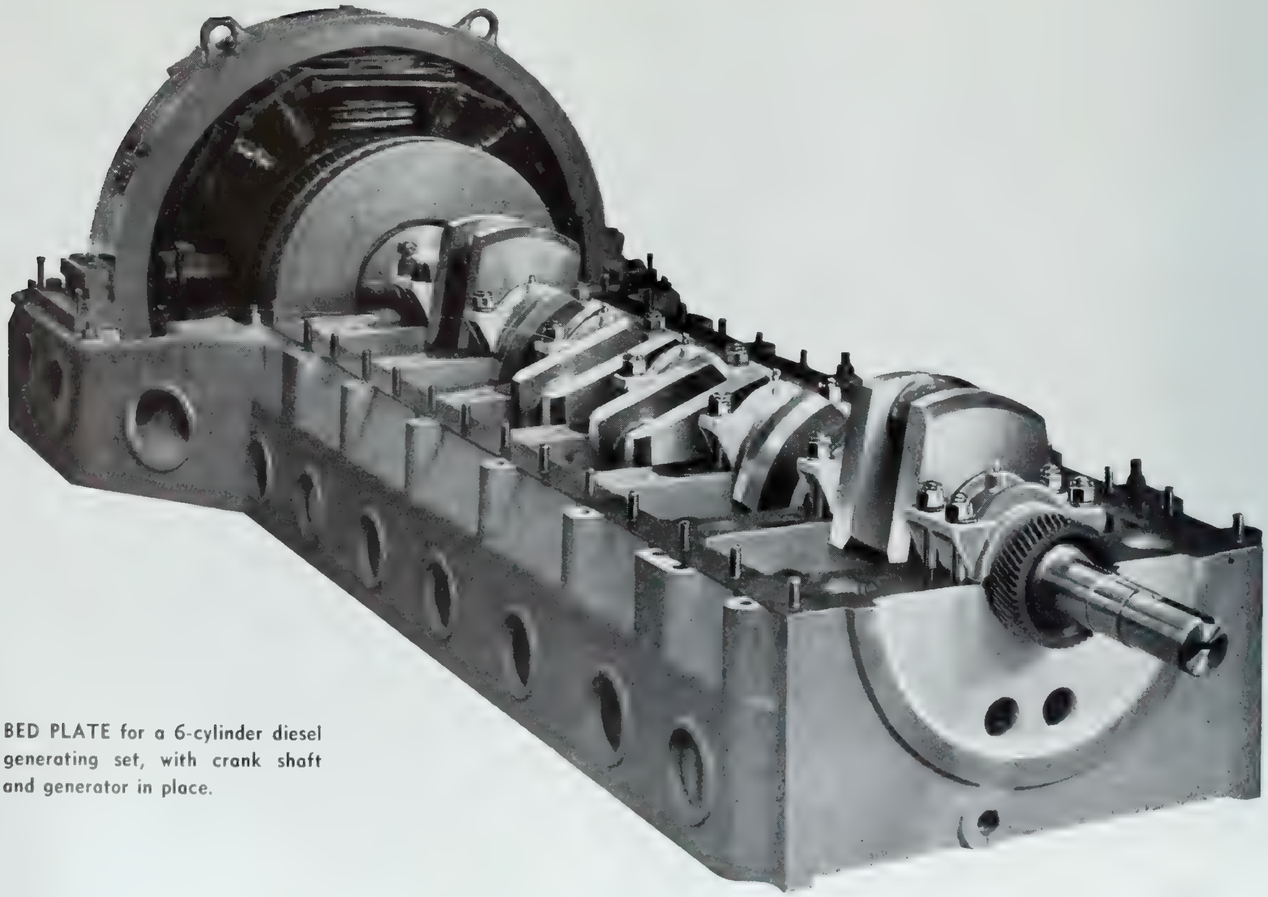
for machining crank pins and crank cheeks.

Several Giddings & Lewis horizontal boring, milling and drilling machines provide very flexible means for many machine operations. One of these machines is of very large capacity and takes care of practically all the machine operations on the eight-ton bed plates for the eight-cylinder engines.

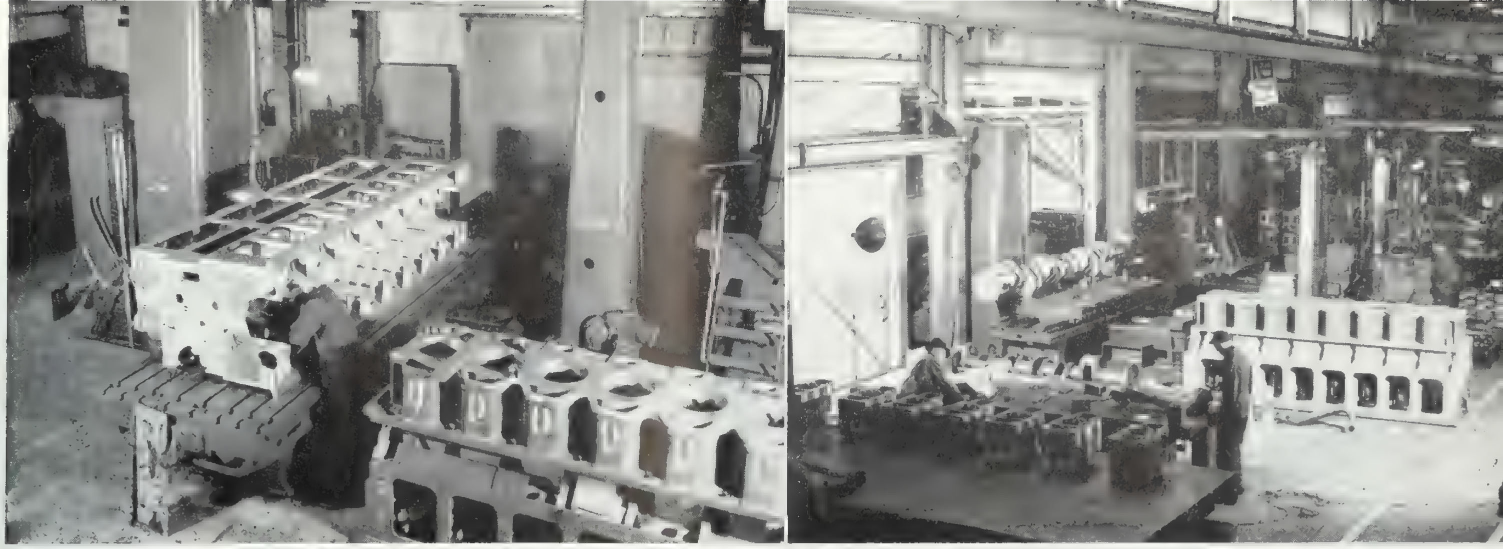
The cuts of engine bed plate with crank shaft in place and of the details of connecting rod, piston wrist pin and cylinder liner illustrate the class of precision machining and high finish that is standard in Enterprise engines. Turret lathes, milling machines, drill presses, and all necessary machine tools are provided in ample quantity and capacity, and are equipped with jigs and fixtures especially designed for accurate and precise machine work.

The results are written large in the excellent records for reliability, economy of fuel, and low maintenance costs that characterize the Enterprise diesel engine, records which are responsible for the large expansion of plant and of business.

ENGINE DETAILS. Piston rod, cylinder liner, wrist pin, and piston.

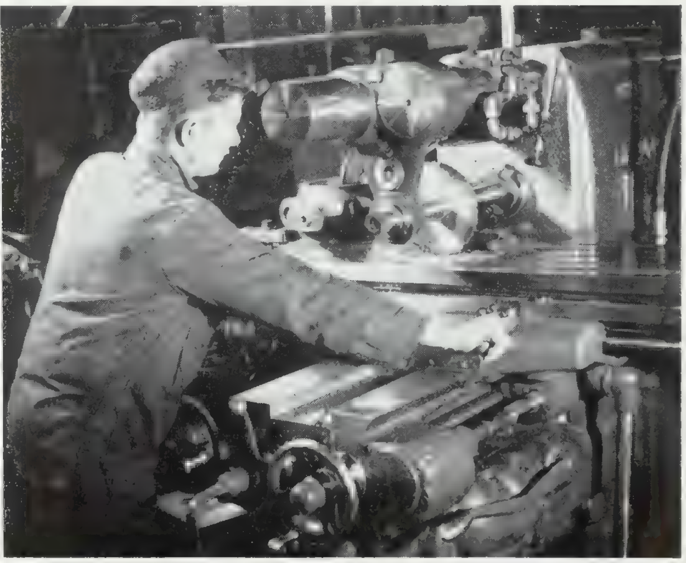


BED PLATE for a 6-cylinder diesel generating set, with crank shaft and generator in place.



BORING, MILLING, AND DRILLING MACHINES working (left) on cylinder block facings, and (right) machining angular surfaces on crank cheeks of crank shaft.

BORING wrist-pin seat in piston.



MILLING MACHINE splitting connecting rod bearing box.

TURRET LATHE set up for machining oil pump housing.

ONE OF THE JUDSON-PACIFIC cranes handling 8-ton cylinder block castin

The Joslyn and Ryan

Supplies Skill and Experience

P. L. JOSLYN

The urgent need for a competent and adequately staffed organization located on the Pacific Coast to expedite ship plan development and approval, has long been recognized by certain shipbuilders. To meet this need, two of San Francisco's outstanding experts, Paul L. Joslyn and Michael J. Ryan, established the firm of Joslyn and Ryan, naval architects and marine engineers.

The firm occupies a unique position in its field, being the third largest in the United States and the largest private organization on the Pacific Coast capable of engaging in major original ship design activities.

The establishment of this office in San Francisco has made available facilities and design service for which it was formerly necessary to look to the Atlantic Coast and so has speeded up the design and construction of vitally needed vessels.

Decentralizing Trend

This trend toward decentralization has been given further impetus and official sanction by the location at San Francisco of an Office of Supervisor of Shipbuilding, U. S. N., under Captain Claude O. Kell, which exercises jurisdiction over all naval construction under way in private yards in Central California and also by the location in Oakland, California, of the West Coast Regional Office of the United States Maritime Commission, Construction Division, under the directorship of Carl W. Flesher. Regional offices of these governmental agencies close to the shipbuilding centers of the Pacific Coast and their ready cooperation with design agents and shipyards have saved weeks of precious time.

The organization of Joslyn and Ryan in San Francisco means the expenditure of some $800,000 annually in salaries and supplies, and affords an opportunity to competent engineers and draftsmen from industrial organizations not engaged in war production to become efficient and experienced ship draftsmen and engineers, for whom there is a crying need at present.

The rapid growth of this organization has necessitated expansion of facilities several times within the past year, and it now occupies two floors at 149 New Montgomery Street, San Francisco.

Paul Joslyn

Paul L. Joslyn holds degrees in both naval architecture and marine engineering. He has had extensive experience in ship design and construction for over thirty years, specializing particularly in the marine engineering field. Long engaged in research and development of more efficient marine power plants, both steam and diesel, he pioneered the first turbine installations on the Pacific Coast, both for cargo and for tank vessels in 1913-1914. He has served as chief engineer at the Bethlehem Steel Company (Union Iron Works plant) in San Francisco and at the Moore Dry Dock Company in Oakland, and as consulting engineer for various steamship companies.

Mr. Joslyn founded the present firm when he accepted a contract from the Willamette Iron and Steel Corporation of Portland, Oregon, to handle the conversion of the former transatlantic and intercoastal liners S. S. *City of Baltimore* and S. S. *City of Norfolk* into the Naval transports U. S. S. *Heywood* and U. S. S. *Neville*, respectively. The work of conversion was completed in ninety working days, a truly marvelous accomplishment.

Upon the completion of this job, he was awarded a contract for doing the design work on a number of fuel oil tankers being built by the Basalt Rock Company of Napa, California, and the Lake Superior Shipbuilding Company of Superior, Wisconsin, and in this undertaking he was joined by Mr. Ryan as an associate.

Michael Ryan

Michael J. Ryan graduated from Sacred Heart College in San Francisco and majored in Naval Architecture and Marine Engineering at Massachusetts Institute of Technology. His early training was obtained in the drawing office of the Union Iron Works. During the last World War, Mr. Ryan, as assistant naval architect at the Moore Dry Dock Company in Oakland, had a hand in the design and construction of many cargo, refrigerator and tank ships. Between 1930 and 1932, he was Technical Surveyor for the American Bureau of Shipping in the Plan Approval Section. As consulting naval architect for some of the more important shipping companies, notably, the United States Lines, Dollar Steamship Lines, Luckenbach and many foreign lines, he specialized in

Organization

In Hull and Engineering Design

M. J. RYAN

tonnage measurement requirements for the Panama and Suez canals.

Joslyn and Ryan at the present time are design agents for the Western Pipe and Steel Company, South San Francisco, who are engaged in the construction of a number of C-3 cargo vessels for the United States Maritime Commission, as well as converting several vessels of this type into naval auxiliaries, such as seaplane and destroyer tenders and aviation escort vessels. Similar work embracing both naval and merchant ship construction is being done for other yards.

U. S. N. Training School

The firm cooperates with the Navy Department and the Office of Engineering, Science and Management Defense Training of the University of California, in the operation of a United States Navy Training School for the purpose of training employees for the office of the Supervisor of Shipbuilding, U. S. N., San Francisco, as well as for naval contractors who are in need of trained men. The school is recognized as the central ship design agency of the Federal Government on the Pacific Coast.

Originally located in the Supervisor's office at the Bethlehem Union Plant, this school was ordered moved to the same building which houses Joslyn and Ryan by Captain Claude O. Kell, Supervisor of Shipbuilding, U. S. N.

Joslyn and Ryan lend effective cooperation in the form of: abundant and authentic reference material and drawings of actual construction; collaboration from experienced department heads on problems of design; and, what is every bit as important, the opportunity for advanced students to work with competent supervision on drawings of naval vessels under construction.

This school is under the able supervision of Lt. Commander E. R. Booker who appointed as instructor Mr. A. P. Hall, former head of the Engineering Drawing Department of Tamalpais High School, a man of considerable shipbuilding experience.

The students, on completion of from one to three months' training, are: assigned to the Office of Supervisor of Shipbuilding for work in the Technical, Estimating or Inspection Departments; released from Civil Service to work as ship draftsmen in various Bay area yards engaged in naval construction under the cognizance of the supervisor's office; or delegated to the office of Joslyn and Ryan. Any of these assignments fulfill the primary function of the school, that of speeding up the shipbuilding program by "breaking bottlenecks" which may arise in the completion of plans. Some seventy men have already been absorbed by the industry since the school was started late in 1941.

The various section heads of Joslyn and Ryan are capable and experienced engineers and shipbuilders, and among these and the rest of the staff are graduates from most of the outstanding engineering schools in this country and Europe. Men from Tyneside and the Clyde rub elbows with men from Old Cathay, truly symbolical of the United Nations of the world who are determined to vanquish the despoilers of civilization.

Drafting has always been considered a man's field but a small number of draftswomen are on the Joslyn and Ryan staff, employed as tracers so that experienced men may be released for actual design work.

The need for ships and more ships is urgent and speed is the watchword. Shipbuilders are constantly expanding their facilities to meet the ever increasing demands of the Government, and organizations like Joslyn and Ryan and the U. S. Navy Training School will insure that trained and experienced personnel will be available to carry out their program for increased tonnage, a program that will inevitably lead to Victory.

Paul Joslyn and Michael Ryan and the members of their staff appreciate their privileged opportunity to render a great public service, and are extending themselves to the utmost as their contribution to the Victory effort.

Recent events have unquestionably forced upon the people of the United States a better understanding and appreciation of the important part their Navy and Merchant Marine play in everyday life as well as in world affairs and what necessary links they are in the machinery of economic security and prosperity. As a result it is to be hoped that the decline in shipbuilding and in the merchant marine that followed the short-sighted policy of isolationism after World War I will not be permitted to take place again.

Hull Department — **JOSLYN & RYAN**

REAR ROW (left to right): T. J. Allan, E. K. McNinch, F. A. Maxwell, F. C. Jacob, E. D. Eggers, G. A. Depierre, W. B. Johnson, B. T. Lee, N. T. Thompson, J. L. Howard, H. E. Cannon, H. T. Howard, R. D. Nygren, R. L. Behrens, R. L. Miller, T. L. Evans, R. W. Boyce, J. E. Haukom, S. R. Anshen, S. D. Peterson, E. J. Winnie, J. A. Love, C. W. Cain, R. J. Sabini, R. G. Rudebeck.

SECOND ROW: W. Lewin, J. L. Dennis, D. W. Lee, L. P. Baldini, T. T. Lunde, R. M. Freeborg, C. J. Matzen, H. R. Green, M. Wolff, A. McSweeney, N. A. Timofeev, E. E. Barton, W. F. Gunnison, J. Clark, I. Vinoff, L. C. Norgaard, E. E. Holm, H. Harlick, F. W. Bonta, C. H. Andrewson.

THIRD ROW: J. H. Peila, F. E. Rugen, G. D. Lodvick, A. G. McCloskey, R. E. Riggs, R. C. Poertner, S. R. Flowers, L. W. F. Lewis, C. A. Johnson, C. C. Dong, E. Capion, P. D. Canali, A. P. Volkoff, J. C. Hare.

FOURTH ROW: W. T. P. Maader, D. W. Lee, C. Howland, G. A. Lansburgh, A. L. Wilson, H. Craig, J. F. Brooks, W. G. Winter, J. M. Balingit. S. J. Yim.

FIFTH ROW: J. A. H. Baird, E. M. Breingan, H. A. Schoening, J. H. Laidman, C. O. Lindberg, W. A. McSweeney, C. R. Sessions.

SIXTH ROW (seated): Sue Martin, Eloise Prendergast, Lillian England, Virginia Congdon.

Engineering Department — JOSLYN & RYAN

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FIFTH ROW: Sylvia Burke, Agnes Dale, Sarah Ryno, Grace Wahlum, Jeanne Ladd, Mabel Wick, Marie Quartararo, Elizabeth Perry, Maude Merritt, Elvira Rice, Ann Lisota, Marie Stonecipher, Mabel Brizzolara, Carrie Chase.

U. S. Naval Training School

THE INSTRUCTOR AND SOME OF HIS PUPILS: Rear Row (left to right): F. Loy, H. Lezzeni, A. Bray, E. Arnold, T. Burke, T. Broxholm, D. Mazzetta, M. Alfaro. Front Row: A. P. Hall (instructor), L. P. Sargeant, J. Hart, P. R. Anderson.

Combustion Control

FOR MARINE APPLICATION

by Thomas A. Peebles

Vice President, Hagan Corporation

THE APPLICATION of automatic combustion control to steam generating equipment on land dates back more than a quarter of a century. Since that time, controls have gone through a series of changes, starting with the first on-off type (wherein fuel was turned completely off when steam pressure rose above the desired value and turned on again when steam pressure dropped.) The second period involved the development of control devices which operated incrementally and adjusted the heat input continuously according to the steam output. During this period, the importance of accurate maintenance of fuel-air ratio and its effect on fuel economy was generally realized, and controls capable of positioning dampers and fuel feed apparatus, according to predetermined test results, developed.

The third and present stage in the development of combustion control involves the general use of so-called "metered control," wherein actual measurements, rather than valve or damper positions, are the pertinent factors in the control of the various elements which go into a combustion-control system.

The first applications of boiler combustion control to the marine field of which we know were made on the tankers Resor and McCobb, built in 1935 by the Federal Shipbuilding & Dry Dock Company. These installations were eminently successful, and the results obtained fully justified the confidence of the engineers. Since that time, there have been many other ships equipped with controls, so many in fact that now automatic combustion control in the marine field is fast becoming standard practice.

A brief review of a few of the principles of boiler operation will serve to illustrate the application of automatic combustion control.

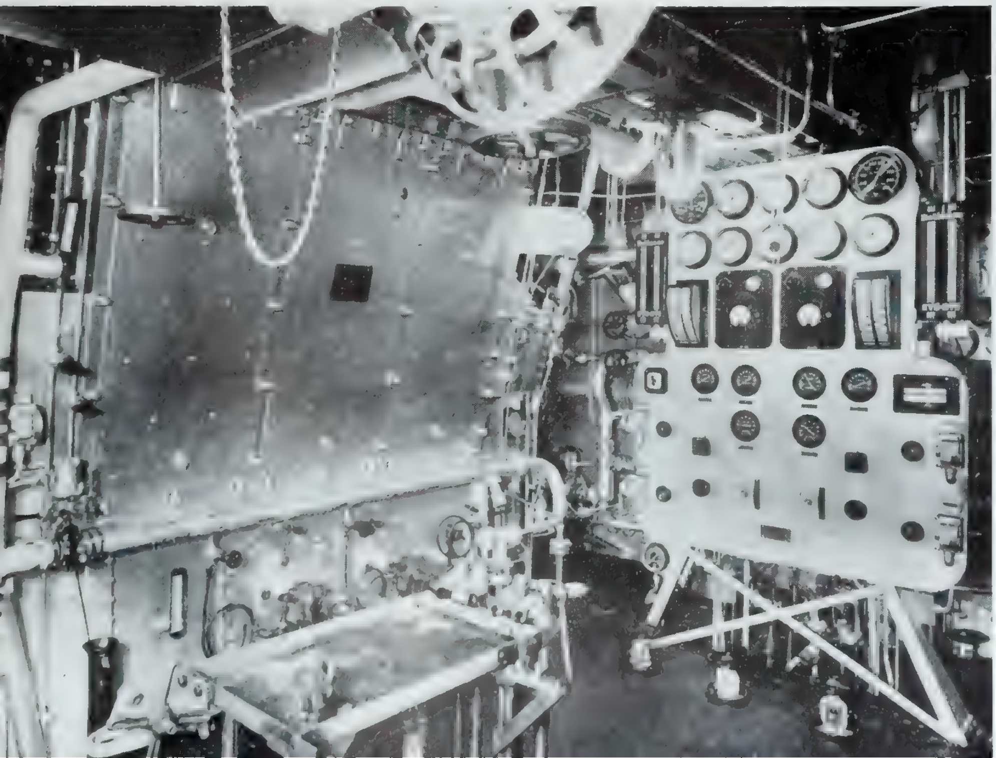
1. A steam boiler is a machine for releasing and transferring latent chemical energy of the fuel into steam at the desired elevated pressure and temperature. Since the amount of heat stored at any instant in the present-day marine boiler is small in comparison with the hourly rate of heat transfer, the operation can be considered as essentially a series operation—that is, the energy appearing at the superheater outlet is an almost immediate consequence of the heat input to the furnace. This must necessarily follow since the time of passage of the products of combustion from the furnace to the stack is a matter only of seconds.

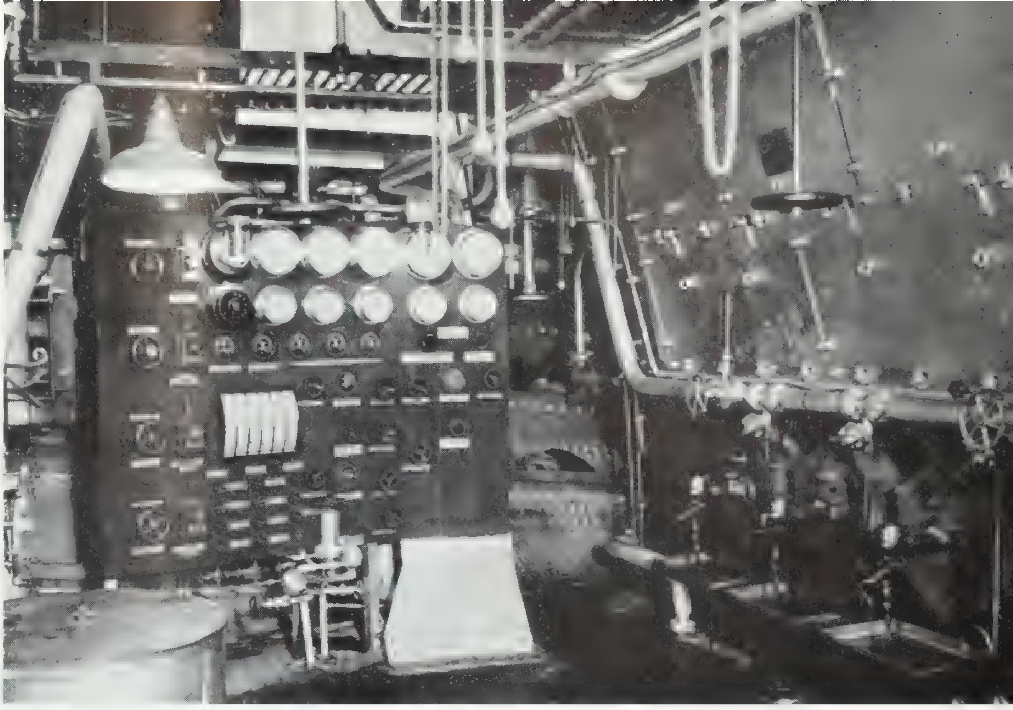
2. Since combustion is a chemical reaction, certain definite minimum proportions are necessary between the rate of fuel and air supply in order to liberate the desired heat units in the furnace. If insufficient air is supplied, the fuel cannot be completely consumed. If too much air is supplied, heat is unnecessarily lost in the flue gases leaving the stack.

From considerations 1 and 2 it follows that the function of combustion control on any installation is to regulate the rate of fuel and air supply in accordance with steam demand and in the relative proportions which make for maximum economy in fuel.

Manual Control

These operations can be done effectively by hand if the operator has available a sensitive pressure gage and a complete set of fuel and air-flow meters with suitable means for rate of flow adjustment and, at the same time, maintains extremely close watch over conditions, correcting any slight changes as they occur. Practically,





TYPICAL AUTOMATIC COMBUSTION CONTROL INSTALLATIONS
on modern American steamers, shown here and at bottom of facing page.

however, such extreme care is physically impossible to carry on for long periods, with the result that changes in steam pressure and variations in the fuel-air ratio inevitably occur, with a consequent lowering in overall operating efficiency.

Automatic Control

An automatic combustion control, on the other hand, can be installed and adjusted to supervise the rates of fuel and air flow within closer limits than can be accomplished by hand and, what is more important, can maintain this same peak supervision continuously.

Automatic Control Economy

Some tests made by the performance section of the U. S. Maritime Commission illustrate what can be expected of automatic combustion control during regular ship operation. The equipment tested was that regularly installed on Maritime Commission vessels. The vessel was equipped with two forced-draft, single-pass, water tube marine type boilers facing a common fore and aft aisle. Each boiler was equipped with two fuel-oil burners with variable capacity pressure atomizers. Combustion was controlled automatically by a pneumatic type control.

The tests were made under constant steaming conditions, and were three in number. The first was run with six high-pressure turbine nozzles open, the second with seven nozzles open, and the third with nine nozzles open. Half of each test was conducted using automatic combustion control, and the other half using hand combustion control. During the automatic portion of the test, the air and oil were controlled automatically, the damper operating gear from the boiler front being disconnected. During the hand operating portion of the test, the air and oil were controlled by hand, with the automatic control equipment entirely cut out. The damper was operated by hand from the boiler front through the operating gear. The automatic oil control valve was by-passed and the valve in this by-pass line used to control the rate of oil supply. This valve was operated by hand by the boiler operator. The tests were conducted so as to get duplicate steam demand as nearly as possible during both tests.

The table herewith shows a tabulation of the final pertinent data. It will be noted that tests No. 1 and No. 2 were made with normal operating procedure under both hand and automatic control. During test No. 3, a special effort was made by the operators, under hand control, to maintain as close as possible watch over operating conditions. It would appear that if a special effort is made by the operating force, the results (insofar as steam pressure and fuel economy are concerned) can approach the results obtainable with automatic control; however, even under these conditions, the automatic control shows up as being approximately one per cent better in economy. During test No. 2 (which was made over a 24-hour period) on both hand and automatic control, it is apparent that the fuel economy shows up even higher, amounting to over three per cent in favor of the automatic control.

The data from which this summary is taken show that both steam pressure and fuel-air ratio as represented

TABLE I

	No. 1 6 Nozzles Open		No. 2 7 Nozzles Open		No. 3 9 Nozzles Open	
	Automatic	Hand	Automatic	Hand	Automatic	Hand
Duration of Test—hours	1	1	24	24	4	4
Steam pressure at superheater outlet	449	447	450	450	445	443
Number of burners	4	4	4	4	4	4
Burner front pressure	1.1	1.7	1.0	1.5	1.7	1.8
Per cent CO_2	—	—	14.6	11.7	14.9	14.9
Fuel oil consumed—lb. shphr.	.7123	.7242	.6997	.7198	.6501	.6533
Saving using automatic control (at actual test conditions), per cent	1.6		2.8		.5	
Saving using automatic control (corrected for difference in rpm and vacuum during hand and automatic operation), per cent	1.5		3.1		.7	

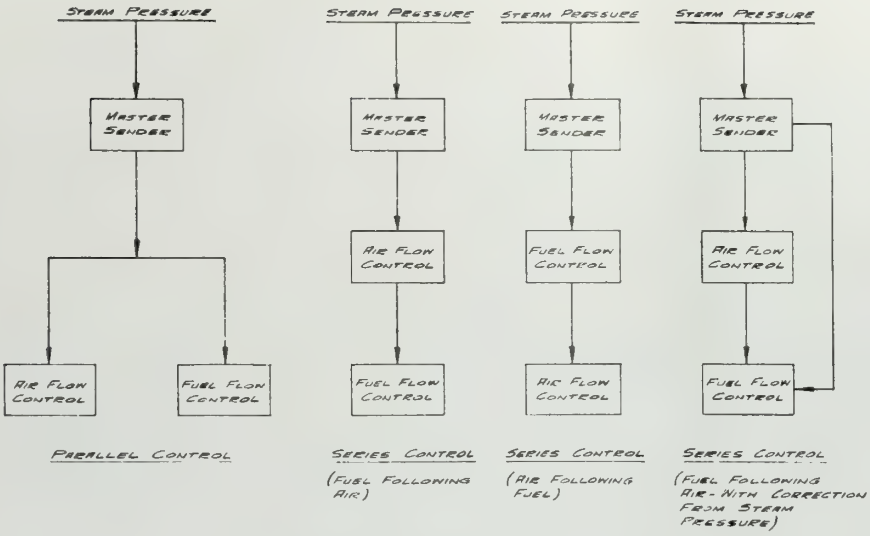


FIG. 1. DIAGRAM OF THE FOUR TYPES of automatic combustion control.

by CO_2 are maintained within closer limits at all times than is possible with hand control. On the basis of this data, it is believed that a three per cent saving in fuel consumption, in favor of automatic control, as compared with hand control, can always be expected, except in rare instances.

While the results shown were taken from data obtained under steady steaming conditions, it is apparent that during maneuvers the comparative tests would be more favorable since the automatic control tends always to maintain the most economical conditions regardless of the rate of firing, something which the operator could not hope to do continuously.

Desirable Features

Automatic control has other features which make it desirable; for example, since the fuel-air ratio is maintained accurately, smoke can be eliminated with a corresponding reduction in the amount of soot blowing necessary. The saving in water and steam here is ob-

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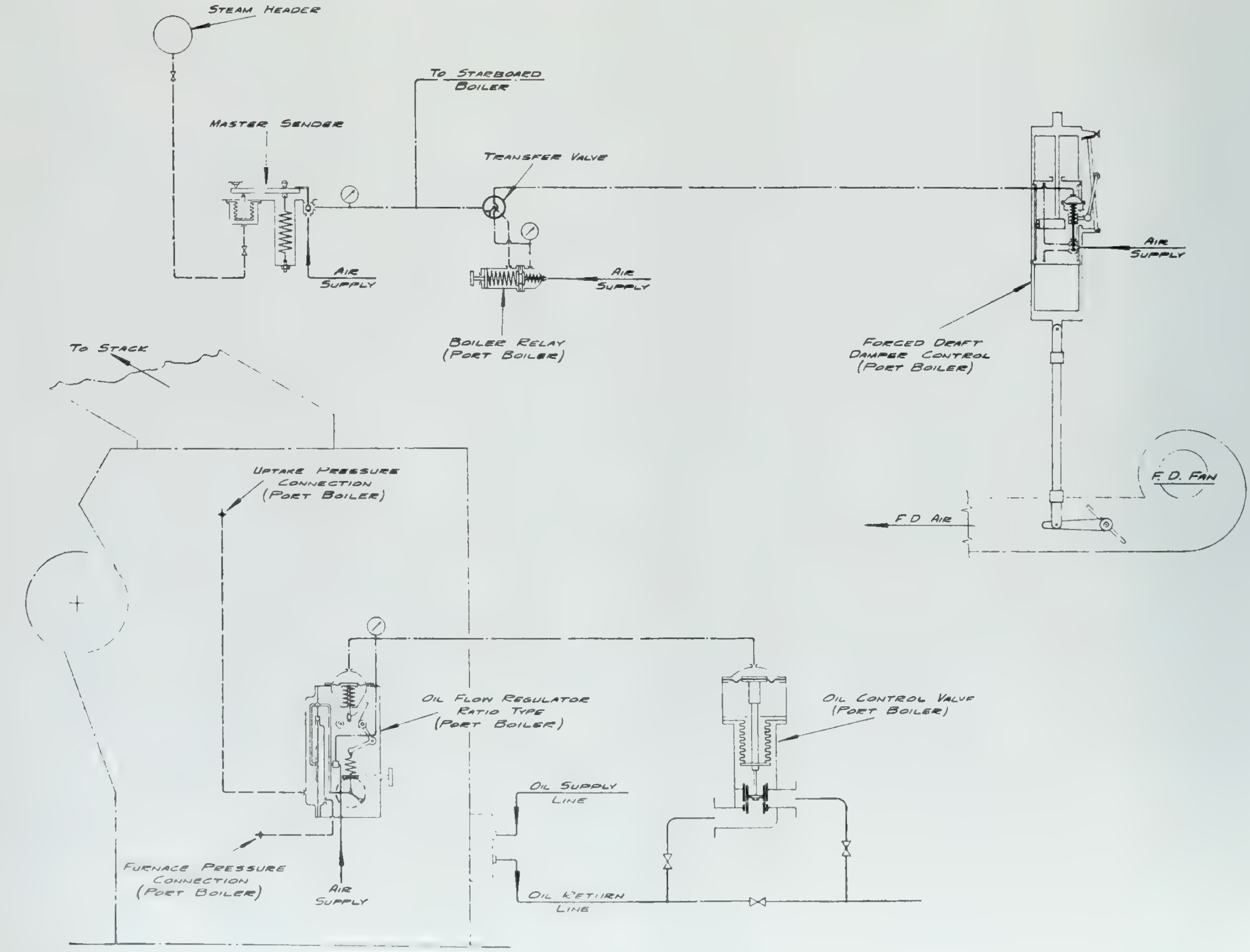
FIG. 2. DIAGRAMATIC ARRANGEMENT of Hagan automatic combustion control.


Steam Header
To Starboard Boiler
Master Sender
Transfer Valve
Air Supply
Air Supply
Boiler Relay (Port Boiler)
Air Supply
Forced Draft Damper Control (Port Boiler)
To Stack
Uptake Pressure Connection (Port Boiler)
F. D. Fan
F D Air
Oil Flow Regulator Ratio Type (Port Boiler)
Oil Control Valve (Port Boiler)
Oil Supply Line
Furnace Pressure Connection (Port Boiler)
Air Supply
Oil Return Line

vious. On one vessel, during a test, it was found that soot blowing could be reduced from once each turn to once each day, with less soot apparent in the stack flue gases during blowing periods under automatic control than with hand control under the more frequent cleaning schedule.

Still a further advantage of automatic control against hand control on marine boilers arises out of the fact that a more constant steam pressure can be maintained. Maneuverability of the vessel should be much better under automatic control than with hand control. During the Maritime Commission tests, mentioned above, the report contains a reference to the fact that manual control was not used coming in and out of port or docking, but the automatic control was watched with interest.

Theory of Operation

Practically all combustion controls operate in the same general manner, with minor differences in the design of the equipment and manner of installation. All of the accepted combustion control systems utilize the steam pressure in the main header as an indication of the demand for fuel. A rising steam pressure indicates that the heat input to the furnace is above the load demand and likewise a falling steam pressure indicates a rate of heat input below steam demand. The master sender, which is sensitive to this steam header pressure, can generate pneumatic, hydraulic, or electrical impulses as a means of signaling to the fuel and air flow controls.

In accordance with these signals from the master sender, secondary control devices regulate the flow of air and fuel to the burners. It is in the method of fuel and air flow control that the various control systems differ from each other. It is possible, for example, to transmit the master impulse directly to separate air flow and fuel flow controls in parallel. It is possible, also, in another scheme, to have the master impulse transmitted directly to a controller which regulates the rate of air flow, and use the rate of air flow thereby established to control the rate of fuel flow. In still another scheme, the master impulse is transmitted directly to the fuel control and the quantity of fuel flow regulated thereby utilized to set up the rate of air flow. These schemes are shown in diagrams on Figure 1.

Theoretically, it might be thought that the parallel system would be most desirable because the signals for changes in heat input are simultaneously transmitted to the fuel and air flow controls, and it might be presumed that fuel and air flow would increase and decrease together. Actually, in practice, it has been found that the rate of fuel flow when firing oil can change much more quickly than can the rate of air flow, and it seems in some cases to be more desirable to use a series type of control, wherein the rate of air flow is set up from the master sender and the rate of fuel flow set up from the rate of air flow. A most important safety feature attending the use of such a system lies in the fact that failure of the combustion air supply, due to fan failure or otherwise, results in shutting down the fuel supply to the burners before any damage can result. Also, fuel cannot be supplied under automatic control before sufficient combustion air is available.

Our illustrations show typical marine control installations. It will be noted that the instruments and controls are brought to a central panel from which the boiler operator can tell at a glance the values of all of the factors pertinent to boiler operation.

The Hagan Control

Figure 2 shows diagramatically a typical Hagan Corporation control arrangement. Referring to the diagram, the control consists of a master sender subjected to the steam header pressure. The application of header pressure on the bellows of the master sender tends to rotate the beams counterclockwise. This tendency for rotation is opposed by the action of a spring which is adjustable for the steam pressure it is desired to maintain. The movement of the beam is utilized in an escapement type pilot valve operating between two ports. The impulse pressure generated by this valve varies between 0 and 60 psi, depending on whether steam pressure is higher or lower than the standard value. This master impulse is transmitted through a manual-automatic valve to a compensating type relay. With the manual-automatic transfer valve in the hand control position, the compensating relay serves as a means for remote adjustment of the forced draft damper position. Under automatic regulation, the compensating relay repeats the master impulse, and provides the operator with an adjustment which he can use to carry more or less load on one boiler than on the others while still retaining automatic control. From this compensating relay, the master impulse is transmitted to a receiving type regulator which adjusts the opening of the forced draft damper, thereby setting up the desired rate of air flow. A measuring type regulator utilizes the pressure drop across the boiler and when boxed generates a new pneumatic loading pressure proportional to this rate of air flow. This loading pressure is then transmitted to a fuel oil pressure regulating valve which automatically controls either the pressure to the burner tips, or the return line pressure, depending on the type of burner used.

SHIPS FOR VICTORY

The measuring regulator includes a cam which can be shaped to provide the desired relation between pressure drop across the selected section of the boiler and the burner oil pressure. This relationship is determinable by test and, when correctly adjusted, insures that the proper rate of oil flow is maintained in accordance with the rate of air flow. The measuring regulator includes also a ratio adjustment, which can be used by the operator to either increase or decrease the proportion of oil to air, thereby adjusting the excess air in the boiler furnace. This control system illustrates a series type control where the master sender sets up the air flow, and the air flow in turn sets up the rate of fuel flow.

Merchant Seaman

A CLEARING HOUSE FOR IDEAS ON THE WAR-WINNING JOB OF WHOLESALE PRODUCTION OF SKILL IN THE MARITIME CRAFTS

HORIZONTAL WELD being made by trainee in a Los Angeles welding school.

War Production
AND VOCATIONAL TRAINING

By J. DOUGLAS WILSON

Supervisor, National Defense Training Program
Los Angeles City Schools

ABOUT TWO YEARS ago, the problem of securing trained and skilled men to enter production factories, plants, and yards which had contracts to make tanks, guns, airplanes, and ships necessary for our national defense was apparent to our Government.

The National Defense Training Program was the answer. Set up as a responsibility of the Federal Security Agency, the public schools were asked to immediately provide training facilities, instructors, equipment and supplies, and organize training classes of a short-term nature, by which skilled craftsmen who had lost their skills in the depression years, might quickly regain them and become employable.

Those two years have seen a tremendous development of the training program. Nearly two and one-half million persons have either been retrained or have improved their skill and knowledge through attending supplementary classes set up for that purpose.

Pearl Harbor accentuated the educational work; more classes were set up; each time a new factory received a contract the problem of man-power again came to the front. Classes began to operate around the clock; schools opened on Saturdays; public school training plans and programs using plant facilities were developed.

Where training was limited because of insufficient or obsolete equipment in the school shops (public schools have always found it difficult to keep their shops up to date due to tax problems), the Federal plan provided funds for that purpose with but one simple requirement; equipment would be furnished to any school district that could justify its need through presenting recommendations from local advisory committees as to the need and urgency of the training which could be given if the new equipment was available.

This, in brief, is the history of the development, organization, administration, and actual operation of defense classes set up to solve an emergency situation. Everyone knows that soldiers, sailors, and air pilots to be successful must be supported by good equipment built by the industrial workers of America. The war cannot be won without constantly increasing numbers of airplanes of all types and ships necessary to transport men, food, clothing, and other accouterments required by the modern mechanized arm forces of our country.

Defense training, now being termed war vocational training, when applied

**LOS ANGELES CITY SCHOOLS
NATIONAL DEFENSE TRAINING PROGRAM**

STUDENTS' PROGRESS CARD FOR WELDING TRAINING PROGRAM

NAME ______________________________ Class ______________

Address ______________________________ Entered ______________

	PROJECT																	
Date	Basic Prep and Safety	Burning	Fundamental Prac.	Flat Independent Bead	Flat Lapped Bead	Flat Fillet	Flat Butt	Vertical Ind. Bead	Vertical Lapped Bead	Vertical Fillet	Vertical Butt	Overhead Ind. Bead	Overhead Lapped Bead	Overhead Fillet	Overhead Butt	Appearance Test	Total Hours	Approved By Instructor

and Shipbuilder Training

SEND IN YOUR CONTRIBUTION to this training section . . . anything you think will help in this wartime production effort . . . suggestions, constructive criticism, or questions.

VERTICAL weld being made by trainee in a Los Angeles welding school.

to shipyards, centers around two major fields; namely, welding and shipfitting. Welding is receiving first consideration, as this craft naturally precedes shipfitting. The development of welding training in the Los Angeles metropolitan area is only typical of what is happening in other areas; therefore, the following description can be applied to many training centers throughout the nation.

In Los Angeles, the Board of Education a year ago constructed two major welding centers in connection with two high schools near the shipyards. Eighty training stations were set up in Wilmington; thirty, at San Pedro; thirty others were set up in two schools near the center of the down town district.

Operating on four-hour periods and 24 hours per day, enabling six classes to meet each day, it has been possible since last July always to have 840 men in training. The training program is set up for a maximum of 180 to 300 hours per man, depending on his previous experience and native ability. (See training program outline.) This amounts to from five to eight weeks of six days each, giving, therefore, opportunity for the training of a new set of students each two months. Training periods have had to be lengthened, as the United States Employment Service has found it increasingly difficult to supply us with trainees who have the proper background and ability. In addition to the 140 training stations mentioned, there is a total of another 200 arc machines scattered throughout several other large cities in Southern California.

A trained welder, however, must be certified by passing an American Bureau of Shipping, Maritime Commission, or Navy test. A test laboratory was therefore the order of the day when training programs began to function.

The testing job is a tremendous one since no welder can be employed unless certified by a responsible laboratory. With 140 training stations in the Los Angeles program, and over 200 more in nearby cities, it will be seen that the laboratory had to be organized on a large scale. Expanding shipyards were employing any and all available welders, many of whom also had to be tested. No charge is made for the test as the Federal Government reimburses the Los Angeles city schools for the costs of operating the laboratory.

Trainees from the public schools are first sent to the Department of Employment, and from there referred to the shipyard needing welders; the yard then assigns the men to the laboratory to take the test. Experienced welders were sent direct to the test station by their union.

Trainees are assigned to the test shop by number, so that the entire testing procedure becomes distinctly impersonal. If a man fails on any one of the three positions, his test record is sent back to his school and a report card checked, indicating the causes of failure. This card helps individual instructors to check up on their teaching procedure and make corresponding adjustments if necessary. Successful test reports are sent to the referring shipyards, who, in turn, notify the men to report for work.

Los Angeles City Schools
National Defense Training Program
WELDING TRAINING PROGRAM

UNIT	OPERATIONS
A. Basic Preparation and Safety First	**SAFETY FIRST** 1. Proper clothing 2. Protect eyes and body. 3. Proper and safe equipment. 4. How to handle hot iron. **Care and use of Machines and Equipment** 1. How to start and stop machines. 2. How to operate and adjust machines.
B. Burning—Hand and Radiograph	1. Setting up equipment. 2. Regulate and adjust the torch. 3. Operate the torch. 4. Gain knowledge of preparing steel plate for welding.
C. Fundamental Procedures of Arc Welding	1. Correct size and type of rod. 2. Setting of polarity. 3. Proper current. 4. Angle of rod. 5. Strike arc. 6. Arc length. 7. Speed of travel. 8. Starting and stopping bead.

STRINGER BEAD

D. Flat Welding Job exercises	1. Independent stringer bead. 2. Lapped stringer bead. 3. Fillet weld stringer bead. 4. Butt weld stringer bead.
E. Vertical Welding Job exercises	1. Independent stringer bead. 2. Lapped stringer bead. 3. Fillet weld stringer bead. 4. Butt weld stringer bead.
F Overhead Welding Job exercises	1. Independent stringer bead. 2. Lapped stringer bead. 3. Fillet weld stringer bead. 4. Butt weld stringer bead.
G. Appearance Test Projects	1. Project to determine ability in flat and vertical. 2. Project to determine ability in vertical and overhead. 3. Project to determine ability in flat, vertical and overhead.

SPECIAL WEAVE BEAD WELDING

H. Flat Welding Job exercises	1. Independent weave bead. 2. Lapped weave bead. 3. Fillet weld weave bead. 4. Butt weld weave bead.
I. Vertical Welding Job exercises	1. Independent weave bead. 2. Lapped weave bead. 3. Fillet weld weave bead. 4. Butt weld weave bead.
J. Overhead Welding Job exercises	1. Independent weave bead. 2. Lapped weave bead.
K. Appearance Test Projects	1. Project to determine ability in flat and vertical. 2. Project to determine ability in vertical and overhead. 3. Project to determine ability in flat, vertical and overhead. 3. Fillet weld weave bead. 4. Butt weld weave bead.

INSTRUCTIONS TO TEACHERS

1. **Organinzation of Training Program**—This program was developed by ten recognized expert welding instructors.
2. **Purpose**—a. The program is planned so that all instructors will follow the same basic training units.
   b. All trainees will have complete information regarding their training program.
3. Use—a. It is to be used in conjuntion with the student's Training Record Card. The instructor marks the number of hours of training taken by each student in the different units of the Training Record Card. This is recorded daily by each instructor.
   b. As units "D" to "G," inclusive, are exactly the same as "H" to "K," except for the kind of weave, each instructor should write across the face of the Training Record Card the words "Special weave bead welding," Whenever the trainee starts on this kind of welding.

The laboratory has a capacity of 200 tests in a 24-hour day. From its inception until the present time (June 10, 1942), 23,294 tests have been given. The percentage passing the "lab" the first time as three-position welders is not large; the number of welders who fail to pass at least one position is also relatively small. As a man is allowed to take additional tests, provided he has taken at least thirty hours of additional training in the phase of welding on which he failed, it is possible for him to qualify in the other one or two positions.

The test as required by the Maritime Commission is in four parts: appearance (or observation), nick, bend, and tensile. From two and a half hours to four hours are required to take a complete test. Each trainee is required to weld three sets of plates (coupons), in flat, vertical, and overhead position, respectively. Each welded coupon is then cut in three parts and the nine coupons are tested, using the nick, bend and tensile procedure.

The percentage of successful tests is in proportion to the men's previous experience, training, and also emotional reaction of each man to the test. Some men become quite nervous, perform badly, and therefore do not pass all positions. They take additional training and then return for a "retake." The number who pass two positions is, of course, much higher than those who pass all positions. Welders recommended by the shipyards to take the test before their training is fully completed is another cause for some of the laboratory test failures.

Defense or war vocational classes can be set up by meeting Federal and State requirements. These requirements are not difficult to meet when employment conditions in a war production factory warrant training classes. Local school National Defense Supervisors, as well as State Supervisors, are all eager to render the best possible aid and service, to meet the demands for more and more manpower.

Draft regulations are causing employers to tap a new source of employees; there are now many women in training classes which were formerly limited to men only. This change is at present in the aircraft and machine shop trades only.

Certainly the program of building airplanes, tanks, battleships, and merchant ships to strengthen our national defense has disclosed the importance of skilled workers in the industrial process. Never before has practical training been given such unanimous endorsement by the American people.

The Foundation FOR THE SHIP

II Origin of Ship Shape

Last month we published a short article in which we figured a small barge made from one cubic foot of steel. We found: that while the solid cubic foot of steel would sink to the bottom like a shot, a sheet of steel $\frac{1}{16}''$ thick, 16′ long, and 12′ wide could be rolled from the one cubic foot; that this sheet could be formed into a barge 16′ long, 3′ beam, and 2′6″ deep, with triangular pointed ends; and that this barge would float with 2.2 inches draft, and would carry 5107.2 pounds of cargo and still have 5 inches freeboard.

We posed a problem to make such a barge out of one cubic foot of wood, assuming that a $\frac{3}{4}''$ thickness of wood was equal to $\frac{1}{16}''$ thickness of steel.

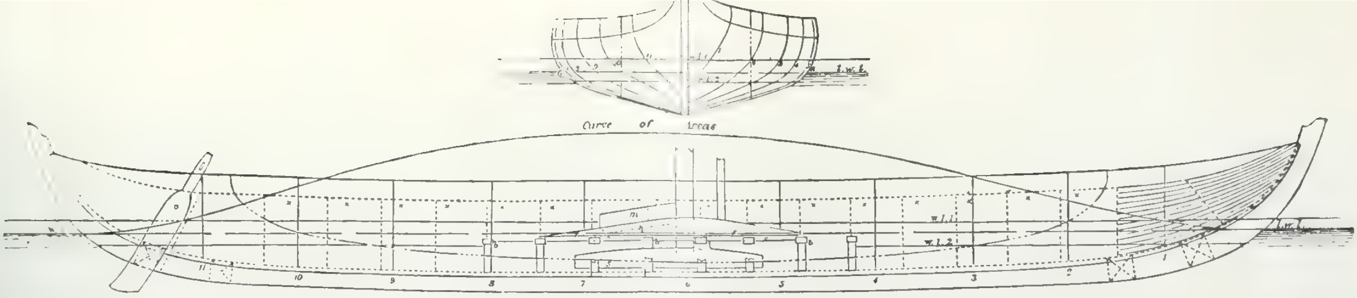
To work this out, we would cut the cubic foot into 16 pieces, 12″ square, $\frac{3}{4}''$ thick, assuming that we could cut the wood without waste. The best we could do with these 16 pieces would be to make a barge one square foot in cross section and four feet long. She would have pointed ends, and would have a horizontal plane area of three square feet. She would still weigh 35 pounds, and would require a displacement of $\frac{35}{64}$ of a cubic foot to float her or a draft of approximately $\frac{3}{16}$ of a foot, or $2\frac{1}{4}''$. This draft is approximately the same as that which we found necessary to float the steel barge. For the wooden barge, the displacement per inch of immersion would be $\frac{35}{2.25} = 15.5$ lbs., as against 224 pounds for the steel craft. Our small wooden barge, therefore, would hold up her own weight and would sink to a nine-inch draft and three-inch freeboard, with a cargo load of $15.5 \times 6.75 = 104.6$ pounds.

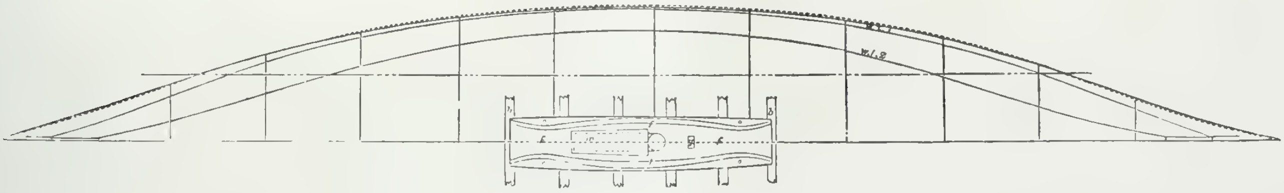
These two barges illustrate very graphically the advantages of steel as a shipbuilding material. Of course, we cannot generalize from a simple example such as this, and no one would think of building a wooden boat from a one-foot cube of wood. Our wooden barge is full of joints, and our steel barge is very thin in its sides, bottom and deck. Either would do as a floating carrier in still water; but, should a storm come up, the wooden barge would very quickly come apart, and the steel barge would soon be battered out of shape.

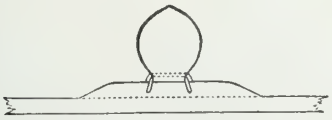
If we could imagine this little steel barge filled with 5000 pounds of cargo being towed through a storm, we would see that the steel hull would be constantly subject to strains of every kind.

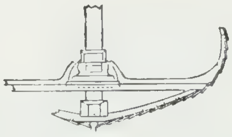
At one moment the hull would be balanced on the tip of the wave so that the metal of the deck and top sides would be under a tensile strain, threatening to pull apart while the bottom and lower sides would be under compression trying to buckle. The next moment she would be supported on each end at the bottom of the wave trough, and the strains described above would be reversed. Nearly always, a ship at sea is taking a course which cuts diagonally across the waves, and the action in that case adds a twisting strain.

While it is true that steel, as shown by our example, is much better shipbuilding material than wood, it is also true that the machinery to produce steel plates, sheets and shapes of sufficient size to be useful in building large seagoing ships is a modern development. Wood was the shipbuilding material for thousands of years, and, before there were any iron or steel ships,









wooden ships propelled by oars or sail, or steam, or combinations of these motive powers, had explored every bit of salt water on the earth.

The shape and structure of the modern vessel is the result of long generations of accumulated experience developed in the struggle with the sea. We know from the crude illustrations in Egyptian, Grecian and Roman tombs and temples; from descriptions by Grecian, Roman and Hebrew writers, that the galleys of the Mediterranean had keels, stems, stern posts, ribs, deck beams, planking, and that their midship section and under-water bodies indicate an effort to solve the same problems that govern the work of naval architects today.

To appreciate this, one need only take the case of the Viking ships built by the Norsemen in the 5th century A.D. and prior. Our illustration shows the profile with structural development lines, the end elevation with bow and stern lines, the half body plan with lines and certain details, all taken from the Transactions of the Institution of Naval Architects, wherein they appear in connection with a paper describing one of these ships, the hull of which was found in 1880 at the entrance of Christiana Fjord, Norway. The dimensions of this ship are: length 77′ 11″; beam 16′7″; depth, gunwale to top of keel amidships, 5′9″. The great Norse sea chieftans were buried on the seashore in their favorite ships. This one happened to be buried in blue clay, which is an excellent preserver of timber, and it was exhumed complete except for some decay at the bow and stern.

At a later period, 8th to 11th centuries, Norsemen in larger vessels of the same type colonized Iceland, Greenland, and (at least one expedition) New England, and terrorized the ancient civilizations of the Mediterranean Sea, in more than one instance hammering at the gates of Constantinople.

The fastening of the planking on these Viking ships is very interesting. As the detail in the illustration shows, the planks are put on clinker fashion, that is the lower edge of a plank overlaps the upper edge of the next lower plank. The planks average 9½″ width amidships and the lap is 1″, and the thickness of the planks 1″, except two strakes, the sixteenth from the keel, which is 1¾″ thick and forms a shelf for the ends of the beams, and the third below the gunwale, which is 1¼″ thick and carries the holes for the oars.

The planks are fastened together at the lap by iron rivets, spaced 6 to 8 inches. The rivets are ¼″ to 5/16″ with heads approximately 1″ diameter and riveting plates ½″ to ¾″ square. The planks were worked down from thick slabs, and a ledge 1″ high is left along the center of the inboard side of each shelf. The upper edge of each plank and this ledge bear on the floor timbers and each plank is fastened to each floor by a tough root, about ¼″ diameter, which is passed through a hole in the floor and through two holes in the ledge, one on each side of the floor.

The floors (equivalent to ribs or frames) are made of natural selected round branches, 4″ diameter at keel tapering to 3″ at the beams. Beams are 4″ x 7″ and rest on the shelf strake and on the ends of the floors. Knees fastened to the top of the beams by oak trenails carry the upper planking to which they are fastened by trenails. The timber used is all oak.

This vessel shows admirable lines and great skill and ingenuity in construction. In fact, it would be hard to find today a vessel in which strength and lightness are combined to greater advantage than in this 1500-year-old Viking ship.

In our next installment, we will attempt to show the development of the application of steam power to ship propulsion and its effect on the structure and shape of ships.

Robins Workers Buy Navy Bomber

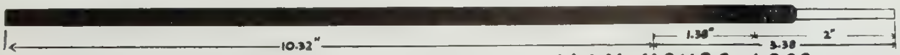
Employees of the Robins Dry Dock and Repair Co., Erie Basin, Brooklyn, subsidiary of the Todd Shipyards Corporation, officially closed their "Buy a Bomber" drive May 1, as contributions passed the $45,000 mark.

A check for the grand total was presented by Thomas Lancely, secretary of the campaign committee, to Rear Admiral E. J. Marquart, U.S.N., Commandant, 3rd Naval District, on May 3.

Four months ago, a group of employees obtained permission to solicit pledges from the thousands of yard workers.

Valuable Information for Welders

Material and Labor Loss per Month in Bay Area Shipyards....

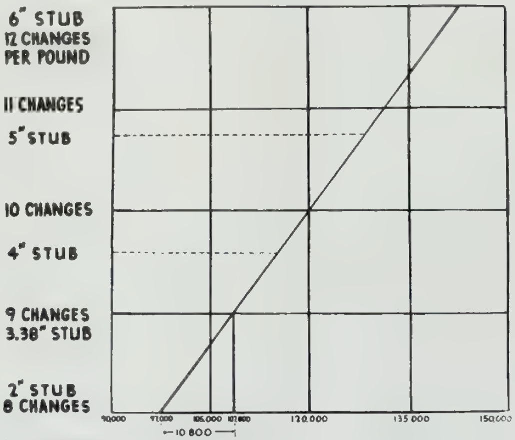


ELECTRODE LOSS

AVERAGE BAY AREA STUB END LOSS	3.38"
ACCEPTABLE AVERAGE STUB END LOSS	2.00"
EXCESS ELECTRODE LOSS	1.38"
PERCENTAGE OF EXCESS OVER ACCEPTABLE	69%
EXCESS LOSS AS PERCENTAGE OF TOTAL CONSUMPTION. . .	10%
BAY AREA SHIPYARD CONSUMPTION PER MONTH	2,000,000#
LBS. OF EXCESSIVE ELECTRODE LOSS PER MONTH...	200,000#

MAN HOURS LOSS

BASED UPON AVERAGE ELECTRODE CHANGE TIME OF 21.6 SECONDS.

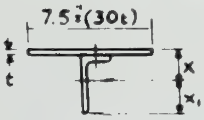


MAN HOURS LOST PER MONTH .... 10,800 HRS.

The information contained in the table and graphs at the right is the result of a survey of welding in Pacific Coast shipyards made by the Lincoln Electric Company, and shows how a more economical use of welding rod would affect the shipbuilding program.

The tables on this and the next two pages were given to Pacific Marine Review by the well-known consulting naval architects and marine engineers, Joslyn and Ryan of San Francisco. They show the riveted sections more commonly in use in American shipyards and the equivalent sections where welding is used.

These tables should be of great value and interest to the designer and draftsman as well as to the practical welder. They show graph-



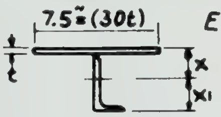
RIVETED SECTIONS

30t (7.5") OF PLATING INCLUDED IN SECT.

.24" & .26" PLATING

7.5" x .25" PL. = 1.88 SQ. IN.

TOTAL AREA	MOMENT OF INERTIA	x	x₁	RIVETED SECTION	SECTION MODULUS
3.07	1.21	.45	2.30	L-2½ x 2½ x ¼	.53
3.19	2.02	.55	2.70	L-3 x 2½ x ¼	.75
3.44	3.05	.65	3.10	L-3½ x 3 x ¼	.99
3.57	4.45	.77	3.48	L-4 x 3 x ¼	1.28
3.97	5.30	.85	3.40	L-4 x 3 x 5/16	1.56
4.36	6.09	.92	3.33	L-4 x 3 x 3/8	1.83
4.28	9.71	1.14	4.11	L-5 x 3 x 5/16	2.36
4.74	11.16	1.23	4.02	L-5 x 3 x 3/8	2.77
4.75	16.06	1.42	4.83	L-6 x 3½ x 5/16	3.33
5.30	18.55	1.52	4.73	L-6 x 3½ x 3/8	3.92
4.90	18.77	1.62	4.13	BA-5½ x 3 x .32	4.54
5.32	20.57	1.70	4.05	BA-5½ x 3 x .38	5.08



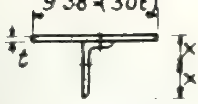
EQUIVALENT WELDED SECTIONS

30t (7.5") OF PLATING INCLUDED IN SECT.

.24" & .26" PLATING

7.5" x .25" PL. = 1.88 SQ. IN.

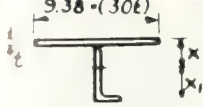
SECTION MODULUS	EQUIVALENT WELDED SECTION	MOMENT OF INERTIA	x	x₁	TOTAL AREA
1.49	L-2½ x 2 x ¼	2.93	.79	1.96	2.94
1.76	L-2½ x 2 x 5/16	3.31	.87	1.88	3.19
1.76	L-2½ x 2½ x ¼	3.33	.86	1.89	3.07
2.09	L-2½ x 2½ x 5/16	3.76	.95	1.80	3.35
2.25	L-3 x 2½ x ¼	4.97	1.04	2.21	3.19
2.51	L-2½ x 2½ x 3/8	4.41	.99	1.76	3.50
2.64	L-3 x 2½ x 5/16	5.57	1.14	2.11	3.50
3.02	L-3 x 2½ x 3/8	6.13	1.22	2.03	3.80
3.09	L-3½ x 3 x ¼	7.58	1.30	2.45	3.44
3.70	L-4 x 3 x ¼	10.19	1.50	2.75	3.57
4.39	L-4 x 3 x 5/16	11.50	1.63	2.62	3.97
5.03	L-4 x 3 x 3/8	12.63	1.74	2.51	4.36
5.08	FL. PL.-5 x 3 x .26	16.92	1.92	3.33	3.89
5.64	FL. PL.-5 x 3½ x .26	18.20	2.02	3.23	4.02



RIVETED SECTIONS

30t(9.38) OF PLATING INCLUDED IN SECT.

.32" PLATING



EQUIVALENT WELDED SECTIONS

30t(9.38) OF PLATING INCLUDED IN SECT.

.32" PLATING

9.38"×.32"PL.=3.00 SQ IN | 9.38"×.32"PL.=3.00 SQ IN.

TOTAL AREA	MOMENT OF INERTIA	X	X_1	RIVETED SECTION	SECTION MODULUS	SECTION MODULUS	EQUIVALENT WELDED SECTION	MOMENT OF INERTIA	X	X_1	TOTAL AREA
5.09	5.90	.74	3.58	L-4×3×5/16	1.65	2.21	L-2½×2½"×5/16	4.49	.79	2.03	4.47
5.48	6.80	.81	3.51	L-4×3×3/8	1.94	2.78	L-3×2½×5/16	6.63	.94	2.38	4.62
5.40	10.82	.97	4.35	L-5×3×5/16	2.49	3.21	L-3×2½×3/8	7.38	1.02	2.30	4.92
5.86	12.46	1.07	4.25	L-5×3×3/8	2.93	3.88	L-3½×3×5/16	10.25	1.18	2.64	4.93
5.87	17.79	1.22	5.10	L-6×3½×5/16	3.49	4.47	L-3½×3×3/8	11.35	1.28	2.54	5.30
6.42	20.63	1.33	4.99	L-6×3½×3/8	4.13	4.63	L-4×3×5/16	13.76	1.35	2.97	5.09
6.02	21.09	1.39	4.43	B.A. 5½×3×.32	4.76	5.34	L-4×3×3/8	15.27	1.46	2.86	5.48
6.44	23.16	1.48	4.34	B.A 5½×3×.38	5.34	6.21	L-5×3×5/16	22.43	1.71	3.61	5.40
6.42	28.27	1.62	4.70	B.A. 6×3×.34	6.01	6.87	L-5×3½×5/16	24.19	1.80	3.52	5.56
6.87	30.67	1.71	4.61	B A 6×3×.40	6.65	7.18	L-5×3×3/8	24.93	1.85	3.47	5.86
6.52	34.75	1.87	4.45	[6×2.5×12#	7.81	7.97	L-5×3½×3/8	26.85	1.95	3.37	6.05
6.79	43.23	2.01	5.31	B.A. 7×3×.32	8.14	8.01	L-5×3×7/16	26.92	1.96	3.36	6.31
6.90	36.63	1.95	4.37	[-6×2.56×13.3#	8.38	8.75	L-6×3½×5/16	36.15	2.19	4.13	5.87
7.30	46.86	2.11	5.21	B.A. 7×3×.38	9.00	8.95	L-5×3½×7/16	29.10	2.07	3.25	6.53
7.37	42.45	2.03	4.29	[-6×2.94×15.1#	9.89	9.73	FL PL 6×4×.32	39.03	2.31	4.01	6.10
7.48	43.22	2.05	4.27	[-6×3.5×15.3#	10.12	10.08	L-6×3½×3/8	40.02	2.35	3.97	6.42
7.75	44.16	2.10	4.22	[-6×3×16.3#	10.46	11.09	L-6×4×3/8	42.70	2.47	3.85	6.61
7.77	60.57	2.41	4.91	[-7×2.95×16.4#	12.34	11.40	L-6×3½×7/16	43.55	2.50	3.82	6.97
8.12	62.64	2.47	4.85	[-7×3×17.6#	12.92	11.89	FL. PL. 7×4×.32	54.71	2.72	4.60	6.42
8.82	66.71	2.57	4.75	[-7×3.10×20#	14.04	12.45	L-6×4×7/16	46.31	2.60	3.72	7.18
8.55	68.88	2.54	4.78	[-7×3.45×19.1#	14.41	13.51	L-7×4×3/8	59.87	2.89	4.43	6.99
8.90	70.81	2.59	4.73	[-7×3.5×20.3#	14.97	14.19	FL. PL 8×4×.32	73.53	3.14	5.18	6.74
8.43	85.33	2.84	5.48	[-8×2.97×18.7#	15.57	15.24	L-7×4×7/16	65.09	3.05	4.27	7.63
8.63	86.84	2.87	5.45	[-8×3×19.3#	15.93	16.27	FL. PL 8×4×.38	81.03	3.34	4.98	7.42
8.83	88.28	2.91	5.41	[-8×3.02×20#	16.32	16.60	FL.PL. 9×4×.32	95.62	3.56	5.76	7.06
9.23	96.24	2.97	5.35	[-8×3.45×21.4#	18.00	18.02	L-8×4×7/16	88.20	3.54	4.84	8.06
9.63	99.04	3.02	5.30	[-8×3.5×22.8#	18.68	19.07	FL.PL. 9×4×.38	105.48	3.79	5.53	7.80

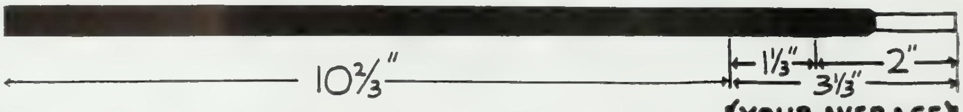
ically the savings in weight effected by welded joints. This saving would be directly proportional to the area in each case.

Another set of these tables for heavier plating will be published in a forthcoming issue of Pacific Marine Review.

●

THIS GRAPH and the one on facing page illustrate the value of economical handling of welding rods in shipyard welding. They should be prominently posted in every shipyard. Copies may be obtained on application to the Lincoln Electric Company.

WHAT STUB ENDS MEAN IN SHIPS.



(YOUR AVERAGE)

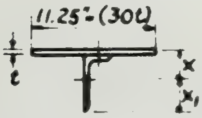
AVERAGE BAY AREA STUB END LOSS	3⅓"
ACCEPTABLE AVERAGE STUB END LOSS	2"
PRESENT EXCESS WELDING ROD LOSS	1⅓"

THIS LOSS EACH MONTH IN BAY AREA EQUALS ROD USED IN 1⅓ SHIPS.

SHIPS LOST PER MONTH.	
2" Stub	0
Your Stub 3⅓"	1⅓
4" Stub	2
5" Stub	3
6" Stub	4

BURN ANOTHER INCH
BUILD ANOTHER SHIP

EQUIVALENT SECTIONS



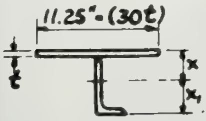
RIVETED SECTIONS

30t(11.25")PLATING INCLUDED IN SECT.

.38" PLATING

11.25"x.38"PL.=4.22 SQ.IN.

TOTAL AREA	MOMENT OF INERTIA	X	X₁	RIVETED SECTION	SECTION MODULUS
6.62	11.65	.87	4.51	L-5x3x5/16	2.58
7.08	13.51	.95	4.43	L-5x3x3/8	3.05
7.53	15.27	1.03	4.35	L-5x3x7/16	3.51
7.09	19.17	1.08	5.30	L-6x3½x5/16	3.62
7.97	16.98	1.10	4.28	L-5x3x½	3.97
7.64	22.28	1.19	5.19	L-6x3½x3/8	4.29
7.24	22.90	1.23	4.65	B.A-5½x3x.32	4.92
8.19	25.18	1.28	5.10	L-6x3½x7/16	4.94
8.72	27.12	1.36	5.02	L-6x3½x½	5.40
7.76	25.23	1.30	4.58	B.A 5½x3x.38	5.51
7.64	30.70	1.43	4.95	B.A-6x3x.34	6.20
8.09	33.50	1.52	4.86	B.A-6x3x.40	6.90
7.74	38.13	1.64	4.74	[-6x2.5x12#	8.05
8.01	47.20	1.77	5.61	B.A-7x3x.32	8.41
8.12	40.33	1.72	4.66	[-6x2.56x13.3#	8.65
8.52	51.27	1.88	5.50	B.A-7x3x.38	9.32
8.59	46.51	1.81	4.57	[-6x2.94x15.1#	10.18
8.70	47.40	1.83	4.55	[-6x3.5x15.3#	10.42
8.97	48.56	1.88	4.50	[-6x3x16.3#	10.79
8.99	66.37	2.15	5.23	[-7x2.95x16.4#	12.69
9.34	68.80	2.21	5.17	[-7x3x17.6#	13.31
10.04	73.50	2.33	5.05	[-7x3.10x20#	14.55



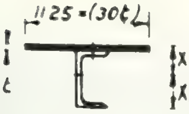
EQUIVALENT WELDED SECTIONS

30t(11.25")PLATING INCLUDED IN SECT.

.38" PLATING

11.25"x.38"PL.=4.22 SQ.IN.

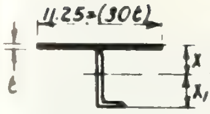
SECTION MODULUS	EQUIVALENT WELDED SECTION	MOMENT OF INERTIA	X	X₁	TOTAL AREA
2.89	L-3x2½x5/16	7.40	.82	2.56	5.84
3.32	L-3x2½x3/8	8.26	.89	2.49	6.14
3.70	L-3x2½x7/16	8.99	.95	2.43	6.43
4.01	L-3½x3x5/16	11.46	1.02	2.86	6.15
4.05	L-3x2½x½	9.64	1.00	2.38	6.72
4.65	L-3½x3x3/8	12.87	1.11	2.77	6.52
4.78	L-4x3x5/16	15.40	1.16	3.22	6.31
5.21	L-3½x3x7/16	14.02	1.19	2.69	6.87
5.55	L-4x3x3/8	17.25	1.27	3.11	6.70
6.22	L-4x3x7/16	18.78	1.36	3.02	7.09
6.41	L-5x3x5/16	25.14	1.46	3.92	6.62
6.79	L-4x3x½	20.02	1.43	2.95	7.47
7.12	L-5x3½x5/16	27.26	1.55	3.83	6.78
7.45	L-5x3x3/8	28.18	1.60	3.78	7.08
8.27	L-5x3½x3/8	30.51	1.69	3.69	7.27
8.33	L-5x3x7/16	30.59	1.71	3.67	7.53
9.06	L-6x3½x5/16	40.36	1.88	4.50	7.09
9.23	L-5x3x½	32.97	1.81	3.57	7.97
9.31	L-5x3½x7/16	33.23	1.81	3.57	7.75
10.10	FL.PL.6x4x.32	44.23	2.00	4.38	7.32
10.26	L-5x3½x½	35.61	1.91	3.47	8.22
10.50	L-6x3½x3/8	45.42	2.05	4.33	7.64
11.50	L-6x4x3/8	48.62	2.15	4.23	7.83
11.86	L-6x3½x7/16	49.70	2.19	4.19	8.19
12.35	FL.PL.7x4x.32	62.02	2.36	5.02	7.64
13.00	L-6x4x7/16	53.05	2.30	4.08	8.40
13.11	L-6x3½x½	53.37	2.31	4.07	8.72
14.08	L-7x4x3/8	68.27	2.53	4.85	8.21
14.31	L-6x4x½	56.82	2.41	3.97	8.97
14.75	FL.PL.8x4x.32	83.33	2.73	5.65	7.96



RIVETED SECTIONS

30t (11.25") PLATING INCLUDED IN SECT.

.38" PLATING CONT'D



EQUIVALENT WELDED SECTIONS

30t (11.25") PLATING INCLUDED IN SECT

.38" PLATING CONT'D

11.25" x .38" PL. = 4.22 SQ. IN.						11.25" x .38" PL. = 4.22 SQ. IN.					
TOTAL AREA	MOMENT OF INERTIA	X	X_1	RIVETED SECTION	SECTION MODULUS	SECTION MODULUS	EQUIVALENT WELDED SECTION	MOMENT OF INERTIA	X	X_1	TOTAL AREA
9.77	75.45	2.29	5.09	[-7 x 3.45 x 19.1#	14.82	15.93	L-7 x 4 x 7/16	74.55	2.70	4.68	8.85
10.12	77.68	2.34	5.04	[-7 x 3.5 x 20.3#	15.41						
9.65	93.60	2.55	5.83	[-8 x 2.97 x 18.7#	16.05	16.97	FL PL -8 x 4 x .38	92.33	2.94	5.44	8.64
9.85	95.34	2.58	5.80	[-8 x 3 x 19.3#	16.43	17.30	FL. PL -9 x 4 x .32	108.42	3.11	6.27	8.28
10.05	96.97	2.62	5.76	[-8 x 3.02 x 20#	16.84	17.57	L-7 x 4 x 1/2	79.95	2.83	4.55	9.47
10.45	105.40	2.69	5.69	[-8 x 3.45 x 21.4#	18.52	19.01	L-8 x 4 x 7/16	100.21	3.11	5.27	9.28
						19.89	FL PL.-9 x 4 x .38	120.12	3.34	6.04	9.02
10.85	108.58	2.75	5.63	[-8 x 3.5 x 22.8#	19.29	21.02	L-8 x 4 x 1/2	107.63	3.26	5.12	9.97
						22.37	FL PL.-9 x 4 x .44	130.66	3.54	5.84	9.75
11.18	142.08	3.11	6.27	[-9 x 3.45 x 23.9#	22.66	22.97	FL PL.-10 x 4 x .38	152.27	3.75	6.63	9.40
10.60	165.37	3.31	7.07	[-10 x 3.45 x 21.9#	23.39	24.33	FL. PL.-9 x 4 x .50	140.22	3.70	5.68	10.47
11.63	146.44	3.18	6.20	[-9 x 3.5 x 25.4#	23.62						
11.10	172.25	3.41	6.97	[-10 x 3.5 x 23.6#	24.71	25.85	FL. PL -10 x 4 x .44	165.73	3.97	6.41	10.19
11.45	180.40	3.47	6.91	[-10 x 3.4 x 24.9#	26.11	26.21	FL PL -11 x 4 x .38	189.01	4.17	7.21	9.78
12.55	162.54	3.30	6.08	[-9 x 4 x 28.6#	26.73	28.52	FL. PL.-10 x 4 x .50	177.97	4.14	6.24	10.97
11.95	186.24	3.55	6.83	[-10 x 3.45 x 26.6#	27.27	29.09	FL. PL.-12 x 4 x .38	230.69	4.45	7.93	10.16
12.45	192.04	3.62	6.76	[-10 x 3.5 x 28.3#	28.41	29.43	FL PL.-11 x 4 x .44	205.77	4.40	6.98	10.63
12.53	200.84	3.63	6.75	[-10 x 3.95 x 28.5#	29.75	32.57	FL PL.-11 x 4 x .50	221.16	4.59	6.79	11.47
13.03	206.53	3.70	6.68	[-10 x 4 x 30.2#	30.92						

OXYGEN is another vital war material much used in shipyards. Here are seven simple rules for conserving oxygen and a warning on letting oxygen cylinders stand idle.

1. Turn off torches when laying out work.
2. Do not use wasteful pressures or oversize tips.
3. Check hose and connections regularly for leaks.
4. Use all the gas in each cylinder before connecting a new one.
5. Close cylinder valves when not in use.
6. Keep tips clean.
7. Be sure equipment is in good working order.

CLEANING WELDER with compressed air blast.

Keep Your Arc Welders Welding

by R. C. Owens

District Welding Specialist, General Electric Company
San Francisco

WITH THE ACCENT on production in shipyards, ordnance plants and welding shops of all types, the failure of even a few sets is sometimes costly. A systematized maintenance program will pay dividends in terms of better welder performance and longer life.

Selection and Installation

To insure proper choice of the rating of a single-operator set, the maximum current, load voltage and duty factor (ratio of arc time to total time) must be taken into account. The rating of most sets is the current which they will deliver for one hour without interruption, without exceeding a prescribed temperature rise.

Installation

In wiring up a welding set, care should be taken to provide adequate branch circuit conductors, and fuse clips large enough to accommodate the necessary fuses. It should be observed that motor-generator type welding equipments have full-voltage motor starters almost without exception, so that due consideration must be given to the starting current of the motors.

Care should be taken to ground the frames of all welding equipments in order to avoid shock or annoying tickles when a grounded person touches the frame of the equipment, and as a safety precaution against harm resulting from insulation failure in equipment or leads, or improper connections.

Regardless of the type of safety ground connection installed, adequate low resistance work leads should always be used, and good connection secured between the work lead and the work. Otherwise the safety ground connection may be overheated by the passage of welding current through it. The life of electrical insulation is seriously shortened by overheating, and overheating is bound to result where insufficient ventilation is provided. Where large numbers of welding equipments are to be located in small enclosures, considerable study should be given to the problem of supplying clean, cool ventilating air. The heat absorbed from the sun added to the heat dissipated by the welding equipments should never be allowed to raise the ambient temperature above 100° F., and thus cause severe overheating.

Inspection and Regular servicing

The competent maintenance man will have a record of all welders under his care. One of the most useful and easy-to-handle references is a card file. All repair work, with its cost, can be entered on the record, and any welder requiring excessive attention or expense can be investigated and causes determined and corrected.

Inspection records will also serve as a guide to tell when welders should be replaced because of the high maintenance cost. Misapplications, abuses, and the like will also be disclosed.

A systematic and periodic inspection of motors and generators is necessary to insure best operation. Most machines are located where some sort of dirt accumulates on the windings. This lowers insulation resistance and cuts down creepage distances. Most shipyard dusts carry metallic particles that are abrasive and often cut the insulation.

Hence the desirability of inspecting motors periodically. If conditions are severe, weekly inspection and partial cleaning are desirable. Most motors require a complete overhauling and thorough cleaning about once a year.

For the weekly cleaning, the motor and generator should be blown out with dry compressed air (at 25 to 30 pounds psi). Where conducting and abrasive dusts are present, even lower pressure may be necessary, and suction is to be preferred, as damage can easily be caused by blowing the dust and metal chips into the insulation.

About once a year, welders should be overhauled. Heavy dirt and grease should be removed with a heavy, stiff brush, wooden or fiber scrapers, and cloths. Rifle-cleaning bristle brushes can be used in air ducts. Dry dust and dirt can be blown off, using dry compressed air at moderate pressure. Grease, oil, and sticky dirt are easily removed by applying cleaning liquids such as carbon tetrachloride.

Insulation of the motor should be dried out by heating to from 90° to 100° C. While the motor is still warm, a high-grade insulating varnish should be sprayed or brushed on. After applying varnish, bake for 6 to 7 hours at about 100° C. If the machine must be put back into service quickly, or if facilities are not available for baking, fair results may be obtained by applying a quick-drying varnish.

Lubrication

Manufacturers' instructions on lubrication of bearings should be carefully followed. Usually grease-packed bearings have sufficient lubricant when shipped from the factory to last about a year under normal conditions of cleanliness and temperature. When sets are operated under severe conditions, shorten the bearing inspection and lubrication interval to six months, or even less if experience warrants. An occasional check of bearing temperature may disclose undue heating before damage is actually done. Once a lubricating routine has been established, it should be carried out, and by reliable men who will follow instructions.

The major causes of bearing troubles are overgreasing and dirt. Overgreasing results in excessive heating of the bearing, frequently with churning and breaking down of the grease with consequent loss of its protective qualities.

To keep dirt out of bearings, follow carefully these three rules:

1. Every part of a bearing assembly, including retainer plates, gaskets, and screws, should be placed in a clean box immediately on removal, and if dropped or otherwise soiled, should not be replaced without a thorough cleaning in a suitable solvent.
2. None but clean hands, tools, and rags should ever be allowed to touch a bearing.
3. Grease *must* be clean. If there is the slightest doubt of its purity, it should be thrown away. Grease is cheap compared with bearings and lost man-hours. Only a high grade of grease should be used.

Brushes

Brush inspection is important. The first essential requirement for the satisfactory operation of brushes is the free movement of the brushes in their holders. Uniform brush pressure is necessary to assure equal current distribution. Brush holders should be set so that the face of the holder is approximately ⅛ inch up from the com-

(Page 122, please)

ARC WELDER
Trouble-Shooting Chart

Trouble	Causes	What To Do
Machine fails to hold heat	Rough or dirty commutator	Commutator should be trued or cleaned
	Brushes may be worn down to limit of adjustment or life	Replace or readjust brushes
	Brush springs may have lost adjustment or may be broken	Replace or readjust brush springs
	Field circuit may have variable resistance connection or intermittent open circuit	Check field current with ammeter to discover varying current. This applies to both the main generator and exciter if used.
	Electrode lead or work lead connections may be poor	Tighten all connections
	Wrong grade of brushes may have been installed on generators.	Check with manufacturer's recommendations
	Field rheostat or tap switches may be making poor contact and overheating	Inspect rheostat and clean and adjust finger tension on switches
	Brush-shifting or other mechanical current-adjusting mechanism may have loose or worn links	Check current-adjusting mechanism for back-lash and play
Motor trips off line	Power circuit may be single-phased	Check for one blown fuse or dead line
	Welder may be operating above current capacity	Check load against welder nameplate. Check duty cycle.
	Welding electrode or work leads may be too long or too small in cross section	Check terminal voltage while machine is loaded; it should not exceed 30 volts on small machines or 40 volts on large machines when operating at rated current
	Ambient temperature may be too high	Make sure that temperature in motor-generator room or housing does not exceed 100 F and that there is no interference with normal ventilation of the machine
Machine fails to start	Power circuit may be completely dead	Look for open disconnect switch, fuses removed from clips, or blown fuses
	Power circuit may be single-phased	Look for one blown fuse or one dead line
	Power line voltage may not be suitable for motor, or may be extremely low; may be accompanied by chattering of the motor starter	Check voltage with voltmeter, particularly at the moment of attempted starting
	Machine may be jammed	See that armature turns over easily by hand, and look for foreign material in air gaps
	Motor starter may be single-phased	Check to see that all fingers on starter make contack when closed
	Overload protecting relays may be tripped	See that relay contacts are closed and that starter picks up when push button is pressed. Be sure to remove cause of tripping.
Welder starts but fails to generate	May be running the wrong way	Check direction of rotation with manufacturer's instructions or direction arrow. On 3-phase motors, direction of rotation may be changed by interchanging any two leads
	Generator or exciter brushes may be loose or missing	Be sure that all brushes bear on the commutator and have proper spring tension
	Exciter may not be operating	Check exciter output voltage with voltmeter or lamp
	Field circuit of generator or exciter may be open	Check for open circuits in rheostat, field leads, and field coils. Also check resistors and rectifiers, if any. Some machines give low output when fields are open.
	Generator may be reversed in polarity due to another machine or incorrect operation in parallel with another machine	*Flash the field with a storage battery or another generator first with one polarity and then with the other to see if it builds up (Flash exciter field if set has separate exciter)
	Series field and armature circuit may be open-circuited	Check circuit with ringer or voltmeter
Welding arc is loud and spatters excessively	Current setting may be too high	Check setting and current output with ammeter
		Check polarity
	Polarity may be wrong	Try reversing polarity or try an electrode of the opposite polarity

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* "Flashing" the field of a generator or exciter is a method of establishing the residual magnetism of the field structure with the proper polarity to cause the machine to "build-up," or generate voltage. It consists of passing a relatively heavy current through the field windings momentarily, using an external source of direct current to supply the power.

If a low-voltage source, such as a storage battery, is used, the series field of the generator should be flashed; if a higher voltage source such as another generator or exciter is used, the shunt field should be flashed.

News FROM THE PACIFIC NORTHWEST

by *Daniel L. Pratt*

Wooden Barges Next in Line

It is of great interest to the Pacific Northwest that new attention is being given to the wood shipyards and what they can contribute further to the shipbuilding effort. Principal interest is in wooden barges, vessels that can be used as auxiliaries in transporting freight and oil. It is hoped by the use of such craft to relieve other vessels to more useful and more essential work, and to do away with the gasoline and fuel shortages that exist along both coasts largely because of lack of transportation.

Increased interest was given to the wooden barge idea by the Senate in proposing to set aside $20,000,000 for the barge building program together with provisions for a fleet of tugs to operate them. Finally, on June 2, the Maritime Commission announced that bids had been asked and received from twenty-seven concerns in 11 different states. The barges to be constructed are 180 feet long, 750 deadweight tons and 11-foot draft. They will not be self-propelling, and not more than five will be offered to one contractor. Bidders in the Pacific Northwest included Berg Shipyard, Seattle; Steinbach Iron Works at Tillamook, Ore.; Rainier Shipbuilding Co., Seattle; Columbia Shipbuilding Co., Portland, Ore.; Grays Harbor Shipbuilding Co., Aberdeen, Wash.; Prefabricating Ships, Inc., Seattle; Seabell Shipbuilding Co., Seattle.

Predicts Employment For Thousands

Eldon Watkins, attorney for barge-building concerns in the Portland district, predicts that thousands of additional men will be given employment on the Maritime Commission's barge-building plan. It is his belief that over a hundred new barge-building plants would be in operation in the Pacific Northwest when the plan gets under way. There are practically this many yards in the district now, large or small, that would be capable of expansion for this type of building.

Destroyer Baldwin Launched

June 14, the destroyer *Baldwin*, sixth to be launched from the yards of the Seattle-Tacoma Shipbuilding Corp., Plant No. 2, at Seattle, was launched with very little ceremony, and a new keel laid in her place. The new fighting ship bears the name of Charles Baldwin, acting master's mate, U. S. N., who was captured while trying to destroy single-handed the Confederate ship *Albemarle*. He was sent to Charleston, S. C., after his capture and later to Libby Prison. The *Baldwin's* sponsor was Mrs. Ida E. Crawford of Millwood, Ill., the Civil War hero's daughter.

New Transport Body Formed

Formation of a new advisory committee to be known as the Seattle Coastwise and Intercoastal Carriers' Advisory Committee has been announced by Joseph B. Eastman, director of the office of Defense Transportation. Capt. Alex M. Peabody, president of the Puget Sound Navigation Co., has been named chairman and others on the committee are Harrison J. Hart, president of the Puget Sound Tug & Barge Co., and C. H. Carlander, president of the Puget Sound Freight Lines. They will work with Ernst R. Holzborn, director of the ODT's division of coastwise and intercoastal transport on port and shipping problems.

Mine Sweeper Launched At Bainbridge Plant

The Winslow Marine Railway & Shipbuilding Co., located on Bainbridge Island, across the Sound from Seattle, on June 12 launched the first of the large number of mine sweepers it has on contract. The new naval vessel was christened *Pursuit* by Miss Carrie Ann Copp, daughter of Al W. Copp, general manager of the company.

Oregon Builds Vessel In 46 Days

On June 1 the Oregon Shipbuilding Co. of Portland delivered another record Liberty ship, the *Thomas Bailey Aldrich*, exactly 46 days after keel was laid. At the same time the company's 41st Liberty ship was launched, after 38 days on the ways. Kaiser officials claim that these schedules will soon become workaday performances as the 45-day overall delivery schedule would be reached before the end of summer.

New Columbia River Drydock

Construction of a 10,000-ton floating drydock for the United States Navy has been started near Longview, Wash., under a contract with the Puget Sound Bridge & Dredging Co., the 13th Naval District has announced. A tract of river waterfront has been leased from the Weyerhaeuser Timber Co., and work of clearing and excavating has already started. The contract will take about six months and cost will be about $1,500,000.

Transportation to Shipyards

To show the problems that have arisen in Portland through the increase in shipbuilding, Ralph Collett, manager of traffic for the Kaiser plants, announced June 1 that three plans were under consideration: (1) purchase of former San Francisco ferryboats for transportation of thousands of workers to their jobs, running from downtown Portland to the Oregon Shipyard below St. Johns, these to be purchased by the Maritime Commission; (2) a twelve-car Spokane, Portland and Seattle special train to carry workers on new tracks to be laid from Portland to the Kaiser plant at Vancouver; (3) a fleet of 150 buses to operate from all sections of Portland, with the termini at the down town ferry slips and train loading station, and in some cases the Oregon, Swan Island and Vancouver yards. The buses to be operated by the Portland Traction Co.

Fifth Seaplane Tender Launched on Sound

The U. S. S. *Unimak,* a seaplane tender, was launched at the yards of the Associated Shipbuilding Co. on Harbor Island, Seattle, May 28. She is the third of her type to be launched by Associated, and the fifth in this district. Sponsor of *Unimak* was Mrs. H. B. Berry, wife of Capt. H. B. Berry, U. S. Navy, District Personnel Officer. Miss Hazella Barnes of Black Diamond, daughter of Mr. and Mrs. H. H. Barnes, a shipfitters' helper in the yard, was elected by vote of the employees to act as flower girl.

Portland Concern Buys Five Barges

Willamette Tug & Barge Co. announces that it has purchased five spoon-nosed gravel barges, the steamer *Skookum,* and a gravel digger from the Diamond O. Navigation Co., owned by Drake C. O'Reilly and others, and has added the equipment to its already large fleet of barges, towboats and diggers. The *Skookum,* built in Aberdeen in 1904, is a 140-foot steamer and will be repaired and put back into service after being idle for some years. Arthur A. Riedel is president of the Willamette Tug & Barge Co. Organized only four years ago, starting with a tug and several barges, this firm now has a fleet of three diesel boats, one gas boat, four diggers, and seven barges, in addition to the Diamond O. equipment listed above.

LAUNCHING PARTY OF THE UNIMAK. Left to right: Capt. W. J. Malone, U. S. N., supervisor of shipbuilding for 13th Naval District; Archie G. G. McGeer, K. C. M. P., representative of Canadian Government; Hazella Barnes, flower girl; Mrs. H. B. Berry, sponsor and wife of Capt. H. B. Berry, District Personnel Officer 13th Naval District; Capt. Berry; Mrs. Tassinder, wife of Admiral Tassinder; Harry B. Jones, Associated Shipbuilders, Seattle.

Marine Shorts

The Port of Seattle is preparing for the construction of a reinforced concrete grain storage annex at the Hanford Street terminal with space for 800,000 bushels of wheat. The annex will be an extension of the present bins of the terminal which now have a capacity of 1,750,000 bushels of bulk and sacked wheat. The work has been approved by the War Production Board. **Col. W. C. Bickford,** manager of the Seattle Port Commission, said the space at the Hanford and Spokane streets terminals, heretofore available for wheat storage, is now needed for defense cargo.

* * *

Portland is turning to women to fill the shipyard jobs. According to **Tom Ray,** secretary of the Boilermakers' Union, only 40 are employed now, but at least 6000 will be added in the next year, as the supply of man-power there is dwindling.

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Lieut. D. T. Adams, director of the Coast Guard Auxiliary at Seattle, sent an appeal to boat owners of the Pacific Northwest to assist in increasing the number of boats and personnel in this organization, which cooperates with the Coast Guard in times of war.

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The fourth of the escort seaplane vessels was launched by the Tacoma plant of the S. T. S. B. Corp. No. 1 on June 6. She was christened *Block Island* by Mrs. H. B. Hutchinson, wife of an aerological officer in the U. S. Navy.

Marine Short-Shorts

The **U. S. Coast Guard Auxiliary** in Puget Sound now has a fleet of twenty-five vessels, all privately owned and giving their service to the Government. . . . Information about less crowded and less expensive homes in the areas east of the Cascade Mountains is being gathered by the **Bremerton Chamber of Commerce** for the benefit of the families of Navy men. . . . Changes are being made in many of the schedules of the **Black Ball Ferry Lines** on Puget Sound so as to accommodate their times to the workmen who must come and go at various intervals between Seattle, Bremerton and Bainbridge Island. . . . President Roosevelt vetoed a bill to authorize the U. S. District Court in Oregon to decide a claim by **Shaver Transportation Co.,** for loss of revenue on freight during the construction of Bonneville Dam.

Personal Gleanings

Lt. Commdr. Isak K. T. Lystad in May assumed duties as Portland Navy routing officer. . . . **K. C. Conyers,** district manager for the McCormick Steamship Co. in Portland, Ore., and president of the Portland Chamber of Commerce, has been commissioned a major in the Army transport service. . . . **Lieut. Col. Mortimer E. Birdseye,** Quartermaster Corps, has been named commanding officer of the Seattle Army General Depot.

News FROM THE PACIFIC SOUTHWEST

by K. M. Walker

W. P. & S. Yard At San Pedro

On June 11, just four months after ground was broken for its new yard at San Pedro, **Western Pipe and Steel** laid a keel for a big steel Coast Guard cutter. Preliminary fabrication for hulls to be erected in this new yard is being carried on at the big W. P. & S. plant at Huntington Park.

W. P. & S. has a contract from the U. S. Coast Guard to build eleven of these big cruising cutters.

L. A. Harbor Tunnel Planned

A "T" vehicular subway to connect Long Beach with Terminal Island and Los Angeles Harbor points is being sponsored by San Pedro Civic Council and other harbor civic bodies in an effort to take care of the congested shipyard worker traffic.

This tunnel will cost several millions. It has been proposed to President Roosevelt by Governor Olson as a Federal project and has the backing of Los Angeles business and labor groups, and of the Army and Navy.

Yacht Harbor Now Coast Guard

On May 27, the exclusive California Yacht Club premises at Los Angeles Harbor was formally turned over to the U. S. Coast Guard as an operating base.

Trim armed patrol boats and sleek C. G. cutters now occupy the yacht moorings and "AckAcks" have been installed for air raid protection.

Chamber Busy Salving Trade

Alvin C. Eichholz recently appointed Domestic Trade Commissioner for the Los Angeles Chamber of Commerce, is busy on the problems of conversion of L. A. industries to wartime activities and so saving as many as possible of the over 6000 small production firms that have been active in the normal business of the great Southwest metropolis.

Mr. Eichholz is well equipped for this work, and the business of Los Angeles is familiar ground for him. During the past eight years, he has been assistant manager of the Los Angeles office of the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce.

Consolidated Launchings

The new yard of Consolidated Steel Corporation at Wilmington is launching ships well ahead of schedule. As we go to press, five or more sleek C-1 hulls have gone into the water, and the interval between launchings is growing shorter. As each hull clears the ways, a new keel is laid, and always at the head of each way is a huge pile of prefabricated, pre-assembled parts ready to be swung into place in the new hull.

Eleven "Libertys" In the Month of May

The big yard of the California Shipbuilding Corporation on Terminal Island is going to town on its Liberty

LEFT: George T. Friedrich, manager production control at "Calship"; J. M. Warfield, administrative manager; Mrs. J. M. Warfield, sponsor; and her mother, Mrs. John D. Derdenger, matron of honor, at launching of S. S. John B. Ashe. CENTER: S. S. John B. Ashe, ready for launching May 16. RIGHT: Mrs. Fred A. Hooper, wife of president of Propeller Club, Port of Los Angeles, and district manager American-Hawaiian S. S. Co., cracks bottle on bow of S. S. John Page.

ship program. During May, they claim eleven deliveries. That month, this yard turned out complete, S. S. *Paul Wingate*, S. S. *Caleb Strong*, S. S. *Benjamin Goodhue*, S. S. *William Floyd*, S. S. *Nathan Hale*, S. S. *Zebulon Pike*, S. S. *Abiel Foster*, S. S. *Henry Knox*, S. S. *Oliver Hazard Perry*, S. S. *Elbridge Gerry*, and S. S. *Rufus King*. Eleven 10,000-deadweight-ton capacity ships in May means one every 67½ hours. The executives and the men all say "Watch us beat that record." Before the end of this year, they expect to be turning out a Liberty ship complete every 60 hours. More power to them.

Concrete Shipyard Developments

The National City plant of the Concrete Ship Constructors now has two of the 360-foot concrete oil barges practically in "frame" as most of the maze of round and square steel reinforcing bars are now in place. The inside forms of the hull are being placed in the first vessel and it is expected that pouring of the first concrete will commence about June 22. Launching, which will consist of flooding the basin in which the vessel is built, will take place about forty days after pouring commences, or shortly after the first of August.

Building the first of these radically new vessels has presented many problems which have had to be met in an original manner by the builders, and these problems have resulted in some delay over the schedule of construction as planned at the first. While concrete ships have been built, more or less successfully, in the past, these vessels embody an entirely original design. Previous construction methods and features of design have been scrapped in favor of the later trends in reinforced concrete construction. Electric arc welding has been used in the assembling of the great mass of interlacing steel bars forming the framework. It is now estimated that this steel work will exceed 1500 tons in weight. Electric arc welding permits the reinforcing bars to be united in a rigid frame so designed as to dissipate localized stresses over a wide area.

The first pour of concrete will extend up to the eleven-foot water line and, when this has hardened sufficiently, pouring will continue in stages up the sides. Bulkheads, fore and aft and transverse, will be poured concurrently with the shell. The San Rafael Brick Company have delivered a small mountain of the special sand and aggregate to be used in the mix, while the personnel is being drilled in the systematic actions required to keep the concrete flowing to the proper places. Once started, this pouring must continue to a conclusion without hitch.

The erection of the framework of the second hull is catching up with the first, due to the application of lessons learned in the handling and installation of the reinforcing bars, and she should be ready for launching about a week after hull No. 1.

San Diego Yard Notes

The Campbell Machine Company yard in San Diego is being enlarged and new loft and shop buildings erected to take care of a new order from the Navy Department for wooden mine sweepers, construction of which will start soon. This yard has a 75-foot fishing vessel, being built to their own account, in frame and planked, which will take the water in the near future. This boat will be powered with a 125-horsepower Union diesel engine. They are also completing the 129-foot tuna clipper *Commodore*. The latter is a 250-ton boat equipped with a 750-horsepower supercharged Union diesel engine and is designed for a speed of 12 knots. She indicates the trend toward faster boats, the average tuna boat speed being between eight and ten miles, and after the war, it is expected that a number of fast boats will be built. These will call for better modeling and design than has been accepted in the past.

The San Diego Marine Construction Company is now devoted entirely to naval work in their new construction and have another four mine sweepers framed and partially planked. The first four are at the outfitting dock and of these the first is approaching delivery.

The Lynch Ship Yard is getting lined up to commence construction of their $1,000,000 order for mine sweepers and all other new construction has gone by the board in favor of the Navy program.

The Harbor Boat Works has received an order for six buoy boats and also is engaged in new work only for the Navy. General repairs on the fishing fleet is going on as usual but is confined to essential work only.

Post-War Steamship Offices

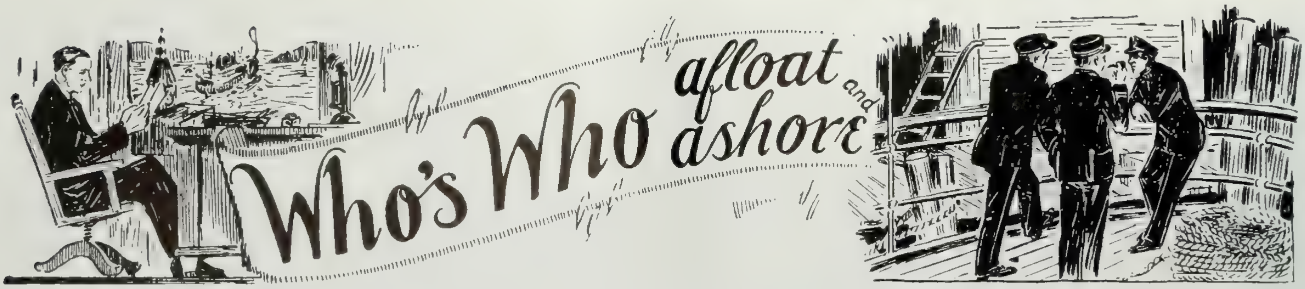
While it has been generally understood the the intercoastal lines, in the majority of instances, would open offices in Pacific Coast ports, the first definite action along that line was indicated by the information that the Isthmian Steamship Company has plans under way to open such offices as soon as hostilities cease. For many years the affairs of the Isthmian Line have been administered by Norton, Lilly & Company, but who recently discontinued their agency arrangement and closed their San Diego offices, which, for the past 19 years, they have maintained in the B Street pier. **Mr. S. C. Charles,** San Diego resident agent for Norton, Lilly & Company, has been transferred from San Diego to San Pedro.

Harbor Tariff Changes Hit

In spite of the complete lack of normal carriers and freight offerings, the San Diego Chamber of Commerce is alive to developments which may have an adverse bearing on the harbor activities. The chamber's shippers committee is protesting proposed changes in tariff rates now being considered by the transcontinental freight bureau. A letter to the standing rate committee of the freight bureau was sent to Chicago and was read before the board by Neil Brown, shipper's committee chairman.

"The Shipper's Committee of the San Diego Chamber of Commerce, consisting of 96 members, representing a cross section of the business life of this city, protests the action contemplated by the standing rate committee," it read.

The letter went on to request the bureau take no action as preservation of the export and import rate structure is essential to the public interest and creates no hardship or other detriment to the participating rail carriers.


Who's Who afloat and ashore

Edited by Jerry E. Scanlon

New Job For G-E Man

The Public Relations Section of the Publicity Department of the General Electric Company, Schenectady, N. Y., has recently established its headquarters on the 8th floor of the Russ Building in San Francisco, for the purpose of maintaining the company's contacts with all media having offices located in the Pacific Coast area. **Paul C. Wilmore** is in charge.

Mr. Wilmore is no stranger to the Pacific Coast, as he has been associated with the Appliance and Merchandise Division of General Electric in San Francisco for the past three years. Prior to that time, he was engaged in advertising and public relations work for over eight years in the East, which serves as a background for his recent appointment.

Born in Ft. Wayne, Indiana, Mr. Wilmore attended Ohio State University at Columbus, Ohio. He now lives with his wife and two children at 342 Parrott Drive, San Mateo, California.

PAUL C. WILMORE
G. E.'s Pacific Coast Publicist

Cushing Promoted

Admiral Emory S. Land, War Shipping Administrator, announced June 4 the appointment of three Assistant Deputy Administrators under **Lewis W. Douglas,** recently named Deputy Administrator.

John E. Cushing was named Assistant Deputy Administrator for Ship Operations; **D. F. Houlihan,** Assistant Deputy Administrator for Fiscal Affairs; and **Franz Schneider,** Assistant Deputy Administrator for Ship Control.

Mr. Cushing, who has been Pacific Coast Director for the War Shipping Administration since its creation in February, will be in charge of ship operations of the Administration and will perform duties formerly carried out by H. Harris Robson, who resigned as Director General of Shipping because of ill health. Mr. Cushing, a resident of San Francisco, is president of the American-Hawaiian Steamship Company and is on leave of absence from that position.

Mr. Houlihan has been Director of Fiscal Affairs for the War Shipping Administration. His new appointment involves increased responsibility regarding the Administration's financial affairs. Mr. Houlihan is on leave of absence as a member of the public accounting firm of Price, Waterhouse and Company, and in 1937-8 served as Director of Finance with the United States Maritime Commission.

JOHN ELDRIDGE CUSHING

Mr. Schneider will have charge of the determination of the requirements for ships, the planning of their use, and their allocation to trades and services. Mr. Schneider performed somewhat similar duties during the last war when as Major, General Staff Corps, he prepared the weekly and monthly reports on tonnage for the expeditionary forces. Mr. Schneider, a graduate of the Massachusetts Institute of Technology, is on leave from the Newmont Mining Corporation, of which he is vice president.

Capt. Macauley Appointed Deputy Administrator WSA

Captain Edward Macauley, member of the United States Maritime Commission, has been appointed Deputy Administrator of the War Shipping Administration, it was announced on June 17 by Admiral Emory S. Land, War Shipping Administrator.

Captain Macauley, U. S. N., Ret., has served as a member of the Maritime Commission since April, 1941, during which time he supervised the Commission's training of officers and seamen for the United States Merchant Marine. He is also Chairman of the Maritime War Emergency Board.

As Deputy Administrator, Captain Macauley will be responsible, on behalf of the War Shipping Administrator, for maritime labor relations, and for the training and recruitment of personnel for the manning of vessels

CAPTAIN EDWARD MACAULEY

operating within the jurisdiction of the War Shipping Administration, activities which will aid in coordinating wartime shipping operations of vessels of the United Nations.

Captain Patrick H. Gallagher of Grace Line's Pacific Oak suffered a broken collar bone, the result of being struck by an automobile in Seattle last month. The injuries prevented him from taking his vessel to sea, and he was succeeded by **Captain Harry Jensen.**

Wheeler Retires

The retirement of **William B. Wheeler** as passenger traffic manager for Grace Line with headquarters in New York, was announced by R. Ranney Adams, executive vice president, and brought to a close one of the most active careers in steamship affairs.

"Bill," as he was known to transportation associates of the air, land and water business, was never located on the Pacific Coast, but he had made frequent trips here. Also, whenever any West Coast steamship man visited the East, he invariably called upon "Bill" Wheeler.

Mr. Wheeler joined the Grace Line in 1931, after a quarter of a century with the United Fruit Company as head of the latter's passenger business.

He has no plans other than to take it easy.

Bohuslav Goes to Sterling

Addison F. Vars, president, announced in June that **Hans Bohuslav** has joined the Sterling Engine Company as vice president in charge of engineering. In making the announcement Mr. Vars stated that the acquisition of Mr. Bohuslav is another step in Sterling's all-out program in producing engines for the Navy. "Mr. Bohuslav's invaluable experience is a priceless asset in the battle for production," said Mr. Vars.

Before coming to the Sterling Engine Company, Mr. Bohuslav was associated with the Enterprise Engine and Foundry Co. of San Francisco. During his ten years' stay, he served first as chief engineer and was later promoted to vice president in charge of engineering. He is known throughout the engineering industry as an authority on diesel and gas engines.

J. W. Barnett of the Los Angeles Shipbuilding and Drydock Corporation, is now a member of the San Pedro Chamber of Commerce board of directors.

A. S. Rupley, manager for W. R. Grace & Co., reported upon his return from two months on business to Guatemala, El Salvador, Nicaragua and Costa Rica that these countries were enjoying the most prosperous period in their history.

A. S. RUPLEY

HANS BOHUSLAV

WSA Administrator In Hawaii

Jay Murphy, for the last five years general agent in Honolulu for the American President Lines, has been named War Shipping Administrator for Hawaii.

Well known in San Francisco, Murphy had been connected with the general offices for a number of years before being assigned to Honolulu. It is not believed Henry F. Grady will appoint a successor for the APL Honolulu post as the Government is handling all of the activities there.

Grady Returns

The return of **Dr. Henry F. Grady,** American President Line's chief, late last month, after a special advisory mission to India, was the signal for a series of luncheon and dinner addresses before various groups.

Navy "E" For Gibbs & Cox

Proud of their achievement in winning a coveted award, **Gibbs & Cox, Inc.,** Naval Architects and Marine Engineers of New York, gave an informal dinner and dance to employees and families and many friends and business associates. So far as we know, this is the first time that the "Navy 'E' for Production" has ever been awarded to a firm of consultants.

CAPTAIN MELVILLE J. BULGER

CAPTAIN JAMES P. RASMUSSEN

Well Deserved Promotion

News of the elevation of **M. J. Bulger** to be port captain of the Matson Navigation Company, San Francisco, is well received by the marine fraternity. He succeeded to the berth left vacant when Captain J. P. Rasmussen was made San Francisco Bar Pilot.

Shipping men recall Captain Bulger's father, the late John K. Bulger, supervising inspector of the United States Steamboat Inspection Service for this district. No official ever in this post was held in higher esteem, or whose high character and impartial justice was ever questioned.

The younger Bulger, who has just been named to what is regarded as one of the most important jobs in the Matson operations, learned his seamanship from the ground up, having started as a cadet some eighteen years ago. Like his illustrious "Dad," Matson's new port captain holds a high place in the industry of Pacific shipping.

R. B. Butterfield will fulfill the duties of **A. R. Lintner** as general manager of the American Mail Line, while the latter is serving as Pacific Coast director for the WSA.

Hubner Writes Best Seller

Men of the sea, and they are many who know **Robert "Bob" Hubner,** will be pleased to learn that he is the author of "The Fabulous People," heralded as one of the best books of the year. The story is about the Japanese in their homeland and dwells on the three years before the Nipponese made their assault on Pearl Harbor.

"Bob," as he is best known, is a former marine editor of the San Francisco *News,* and at present editor of the *Shipping Register.*

New Grace Head For Gulf

Fred M. Rohrer, who began his steamship career as an office boy with the old Pacific Mail Steamship Company in San Francisco, is now vice president of the Grace Line in charge of the Gulf territory with headquarters in New Orleans, as announced last month by R. Ranney Adams, executive vice president, under whom he had served in the New York offices.

Rohrer is well known on the Pacific Coast, having spent most of his shipping life in San Francisco. When he left there in 1938 to become assistant to the late Daulton Mann in New York, he was assistant Pacific Coast manager. He has served in many important positions with the concern. When Panama Mail was formed at the close of the Pacific Mail's career, Rohrer went with the company as auditor.

He was assistant to Adams when ship operations in the Gulf trade warranted expansion of the New Orleans offices.

ODT Shipping Committee For Seattle

Appointment of a Seattle coastwise and intercoastal carriers' advisory committee was announced June 1 by **Joseph B. Eastman,** director of the ODT.

This committee will cooperate with Ernst R. Holzborn, director of ODT's division of coastwise and intercoastal transport on port and shipping problems.

Captain Alex M. Peabody, of the Puget Sound Navigation Company, was named chairman of the committee. Other members are **Harrison J. Hart,** president of the Puget Sound Tug and Barge Company, and **C. H. Carlander,** president of the Puget Sound Freight Lines.

WILLIAM H. SELLANDER

Portland Shipping Committee Named

Formation of a coastwise and intercoastal carriers advisory committee at Portland, Oregon, was announced June 5 by **Joseph B. Eastman,** ODT director.

Acting as an advisory body to **Ernest R. Holzborn,** director of the ODT's division of coastwise and intercoastal transport, the committee will deal with port and shipping problems in the Portland area.

The committee consists of **L. R. Gault,** Western Transportation Co.; **Capt. H. T. Shaver,** Shaver Transportation Co.; **Mark H. Beach,** Columbia Basin River Operators; **Wilbur J. Smith,** Wilbur J. Smith Towing Co.; and **F. O. Meyer,** Knappton Towboat Co.

Booth in Government Service

One of Southern California's best-known shipping men, **Charles S. Booth,** assistant general freight agent for the Matson Line, has entered Government service, and is now stationed at a foreign port.

For twenty years, Booth has been identified with the steamship business. He first entered the marine field in San Francisco in 1921 with the Los Angeles Steamship Company, and two years later was transferred to Los Angeles where he had been until his leave-taking of Matson.

Sellander Retires

The steamship business of San Francisco on July 1, lost one of its veteran members with the retirement of **William H. "Bill" Sellander,** oldest employee of the Matson Navigation Company in point of service. He served continuously for forty-one years.

For the last several years, "Bill" has been manager of the personnel department. However, he is best known as a pioneer in charge of development of the passenger business between Hawaii and the Pacific Coast.

In Navy Service

Robert C. Lee, executive vice president of the Moore-McCormack Lines, whose frequent Pacific Coast visits in the last two years has won for him many firm friendships, has been recalled to active duty in the Navy, and will be attached to the staff of the Chief of Naval Operations.

F. J. Ewers, formerly traffic manager and claims agent in Seattle for the Consolidated - Olympic Line, who joined the Navy in June, 1941, has been promoted to ensign. He entered as petty officer, in the Coast Guard.

Ewers was with the McCormick Steamship Company before going with Consolidated.

J. A. "Jack" Kelly, traffic and operating manager for the Madrigal Line, and prior to that with the McCormick Steamship Company, has entered the Navy with the rank of senior Lieutenant. He is stationed at Mare Island.

Honorable Degree To Marine Engineer

Lester M. Goldsmith, chief engineer of the Atlantic Refining Company, was granted the honorary degree of Doctor of Science by Drexel Institute of Technology, Philadelphia, his alma mater, at the annual commencement exercises of the college on Saturday, June 13. This was the first time in its history that the college, which is this year celebrating the fiftieth anniversary of its founding, has conferred honorary doctor's degrees. Nine alumni were so honored.

Mr. Goldsmith was cited as "An engineer of national distinction, particularly in the field of petroleum transportation, and a recognized authority on the propulsion of ships by both diesel engines and steam turbines. His contributions have signally advanced the state of naval engineering and have greatly promoted the welfare of our country in time of peace no less than in time of war."

Copper & Brass Association Elects

Robert L. Coe, vice president of Chase Brass & Copper Co., Incorporated, Waterbury, Connecticut, was elected president of the Copper & Brass Research Association at its twenty-second annual meeting held May 22 in the Empire Lounge, Hotel Biltmore. He succeeds **John A. Coe,** president of the American Brass Company, Waterbury, Connecticut.

Vice presidents elected were: **John A. Coe,** president, The American Brass Company; **Wylie Brown,** president, Phelps Dodge Copper Products Corp.; **R. E. Day,** president, Bridgeport Brass Company; **C. L. Smith,** treasurer, The National Copper & Smelting Co.; and **Wm. M. Goss,** vice president, Scovill Manufacturing Company; **C. Donald Dallas,** president, Revere Copper and Brass, Inc., was elected treasurer. For manager, **T. E. Velt-**

LESTER M. GOLDSMITH

fort was chosen, and for secretary, **Bertram B. Caddle.**

The board of directors comprises: **John A. Coe, Wylie Brown, R. E. Day, R. L. Coe, W. M. Goss, C. L. Smith, C. D. Dallas, T. E. Veltfort, B. B. Caddle, J. A. Doucett, A. W. Wilkinson, S. H. Perry, Otto Z. Klopsch, and F. L. Riggin.**

Navy Cross Awarded Valvoline Executive

Ensign D. Arnold Singleton, U.S.N.R., formerly assistant manager of Edgewater terminal, Valvoline Oil Company, was decorated the other day, along with two petty officers from his command, with the Navy Cross.

The department released for publication only this portion of the citation: "distinguished service in line of his profession . . . displayed extraordinary courage and disregard of personal danger, during the attack on the fleet at Pearl Harbor by Japanese forces on December 7, 1941."

According to an eye-witness of the impressive decorating ceremony on the parade ground at Pearl Harbor, only three members of the Air Station forces received the Navy Cross—Ensign Singleton and the members of his command.

Ensign Singleton is the son of Vice President M. R. Singleton of Valvoline Oil Company, who has been loaned to the United States for service for the duration as Salvage Director for the Petroleum Industry, Bureau of Conservation, War Production Board, Washington, D. C.

The Ensign, 29 years old, was born at Knoxville, Tennessee, and educated at Miami University, Oxford, Ohio, where he was president of the Delta Upsilon Fraternity.

The very traits of dependability, tenacity of purpose, which he displayed as a member of the Valvoline organization in New Jersey, have won him quick and signal honor in the Navy Department, which he joined last July. He arrived at his post as fuel officer, last July 31, with assignment to which he is still attached, Supply Department, United States Naval Air Station, Pearl Harbor, T. H.

ENSIGN D. ARNOLD SINGLETON

In Army Service

William T. Beeks, one of the best-known admiralty attorneys in the Northwest, with offices in Seattle, has been commissioned a captain in the Army Transport Service attached to the staff of Col. T. J. Weed, superintendent of ATS in Seattle.

A rich experience in the marine field is the lot of Captain Beeks. He was a freight clerk, assistant purser, and purser with the Pacific Steamship Company, sailing on the *H. F. Alexander, Ruth Alexander, President Jackson.* Captain Beeks was also with the old Dollar Line on the *President Adams.*

A commission as captain in the Army Quartermaster Corps was given **Donald R. Maxwell,** former traffic manager of the Puget Sound Associated Mills. Captain Maxwell is best known, however, as being long identified with the Northwest offices of the Luckenbach Steamship Company before joining the Puget Sound Associated Mills.

The Army gained the service of **Victor Johansson,** member of the General Steamship Corporation staff, who is in service as Lieutenant, adding to the mounting list of men from this organization who have enlisted.

Hugh W. Hendrick, traffic counselor and one-time member of the Coastwise Conference, is now a member of the traffic staff of the War Evacuation Authority.

K. C. Conyers, Portland district manager for the McCormick Steamship Company, and president of the Portland Chamber of Commerce, resigned to assume his commission as major in the Army Transport Service.

G. E. Men in the Service

More than 5000 employees of General Electric's plants through the country are now serving in the armed forces, local General Electric officials announced on June 1. They added that employees of the Schenectady works alone since April 1 have been entering the service at the rate of 75 a week. On the Pacific Coast, approximately 100 have left. Despite difficulties arising from replacement of these men, many of whom occupied key positions, net sales billed by the Company as a whole rose 47 per cent above those billed during the first quarter of 1941.

Company employees began joining the armed forces in the fall of 1940. Of those who to date have left General Electric plants for the service, it is estimated that 4200 are in the Army, 500 in the Navy, 100 in the Marine Corps, and approximately 300 in the National Guard. More than 600 of the combined total were reserve officers called up for active duty.

Worthington Elects Director

Mr. Edwin J. Schwanhausser, of Buffalo, New York, vice president, Worthington Pump and Machinery Corporation, has been elected to the Corporation's board of directors, filling a vacancy created by the death of Edward T. Fishwick.

Mr. Schwanhausser has been a vice president of the corporation since 1939.

E. C. Hawley, formerly first officer on the S. S. *Lurline,* is now Assistant Inspector of Hulls, United States Steamboat Inspection Service, Portland, Oregon.

A. E. Byron, veteran cashier with the Matson Company stationed in Wilmington, has retired and is living on his farm in Beaverton, Oregon. He is known to virtually all the Matson seagoing personnel as he served as paymaster at the Southern California port for many years.

Necrology

Captain Lewis Mesherry

On June 5, death claimed **Captain Lewis Mesherry,** managing director of the Army & Navy Club of San Francisco.

One of the best-liked men in San Francisco, "the little Colonel," as he was affectionately known to hundreds, succumbed to a long-standing heart ailment that had threatened his life on other occasions. Wounds received in line of duty in World War I aggravated his condition.

Hundreds of deck and engine room officers were the guests of Captain Mesherry during the 10-odd years he presided over the Army & Navy Club, an organization he founded and worked indefatigably to place among the ranking service men's meeting places in the United States.

CAPTAIN LEWIS MESHERRY

Funeral services were held on June 8 at the National Cemetery, Presidio.

Well-Known Stevedore

Death came unexpectedly to **Captain W. M. Crawford,** president and managing director of the Empire Stevedoring Company of Vancouver, B. C., on May 20.

Known up and down the Pacific Coast, Captain Crawford enjoyed a wide and popular acquaintanceship.

Louis Moreau Porter

Louis Moreau Porter, general traffic manager of the Fruit Dispatch Company, died at 1:10 p.m., Monday, June 1. He was 57 years of age.

Mr. Porter was born in Portsmouth, Virginia. He entered the Traffic Department of the Georgia and Florida Railroad at Augusta, Georgia, in 1906, as chief rate clerk, Freight and Passenger Department; joined the Traffic Department of the Seaboard Air Line at Norfolk, Virginia, in 1908; and was connected with the Old Dominion Steamship Company at New York, of which he was made assistant chief rate clerk in 1910. He became chief clerk to the general traffic manager of the Fruit Dispatch Company, sales organization of the United Fruit Company, in December of 1912. That was followed by his appointment as assistant traffic manager on June 13, 1918; traffic manager on May 15, 1926; and, on September 1, 1926, appointed general traffic manager.

He is survived by his wife, Mrs. Gladys Porter, and son, Corporal Frederick M. Porter, now stationed at Fort Wadsworth, Staten Island.

John H. McCallum Passes

John H. McCallum, one-time president of the California State Harbor Commission, died May 27 at his home, 123 Liberty Street, San Francisco, of a heart ailment. He was 72.

A member of the San Francisco Public Utilities Commission since its inception in 1931, McCallum previously served the Harbor Board, first as a member, 1912-1917; then as president, 1917-1923.

For 30 years—1903 to 1933—Mr. McCallum was a member of the board of directors of the Young Men's Christian Association in San Francisco, and for nearly 20 years he was its president. He was prominently identified with the Methodist Church.

LOUIS MOREAU PORTER

John McCallum came to San Francisco as a boy from Ontario, Canada. All his life he was associated in the lumber industry, and at the time of his death was president of the J. H. McCallum Lumber Company, 748 Bryant Street. He is survived by a sister, Miss Kathryn McCallum; by two daughters, Mrs. C. C. Parmlee and Mrs. John W. Wilke; and by six grandchildren.

Prominent Coast Engineer

George Brick Smith, coast engineer in the production department of the Newport News Shipbuilding and Dry Dock Company, died at 12:30 a.m. May 16, at Riverside Hospital after two days' illness.

A marine engineer and naval architect (University of Michigan), he was 47 years old, and had been employed 26 years at the Newport News yard. Surviving are his wife Mrs. Lucille A. Smith, his mother Mrs. Alfred J. Smith, and sister Mrs. Theresa Smith Cooper.

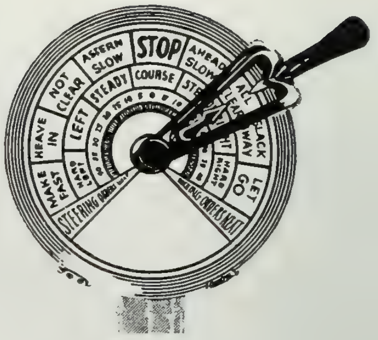
He has been succeeded by L. R. Sorenson, assistant naval architect of the Newport News company.

Capt. Jabez S. Lowell

The death of **Captain Jabez S. Lowell,** U. S. N., Ret., inspector of Naval material and supplies for the Twelfth Naval District, in Mare Island Hospital on June 15, came as a shock to his legion of friends in the military and civilian life of the Bay area.

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

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RULES FOR SALVAGE

QUESTIONS FROM THE SHIPS

Dear Skipper:

I notice that you mention that the last article on Rules of the Road will appear in the June, 1942, edition of the Pacific Marine Review.

We have been following and studying the various articles devoted to the clarification of the Rules of the Road; to say the least, the information gained is both interesting and very educational. I have all the articles filed away for constant reference; the decisions of the courts are of great value to us on shipboard. We now realize that the rules must be obeyed as interpreted by the courts. Your recent articles will be of great value to me in my daily work.

We have been discussing the laws relating to salvage of vessels on the high seas. I wonder if you could tell us whether or not it is possible for a ship's crew to be given a salvage award for work performed while saving their own vessel. Has any crew ever been awarded salvage for such a service?

Yours truly,

M. N. B.

The Skipper is very pleased to know that the recent articles clarifying Rules of the Road have proven to be of value to so many ship's officers.

Questions are welcomed and will all be answered by The Skipper in the order of their receipt. Knowledge is the road to success, and it is hoped that the younger officers especially will take advantage of the service rendered to our readers in the column "Steady As You Go!"

In order to answer your question, it will be necessary for me to give a short outline of the law governing salvage. With few exceptions, the principles are the same throughout the admiralty courts of the world. Salvage is the compensation allowed to persons by whose *voluntary assistance* a ship or her cargo, or both, have been saved in whole or in part from impending sea peril, or in recovering such property from actual peril or loss, as in the case of shipwreck, derelict or other perils of the sea.

Three elements are always necessary in order to make a salvage claim valid in our admiralty courts:

1. A marine peril.
2. Service voluntarily rendered when not required as an existing duty or from any special contract.
3. Success in whole or in part, or that the service rendered contributed to such success.

Generally speaking, the crew of a vessel, under articles of wages and agreement, can become eligible for a salvage award only after the vessel has become a shipwreck, without hope of recovery, and the crew discharged from further service to the vessel. It is the duty of all members of the vessel's crew to render every assistance possible in order to save their ship and its passengers and cargo and all its accouterments from any and all dangers. This assistance could sometimes be better rendered from a camp established on the shore. The crew's duty to the vessel does not cease until the master decides to abandon the vessel and releases the crew from their contract of employment. The only exception to this rule is when some member of the crew performs some very unusual and exceptional service over and above his line of duty, such awards are very rare indeed. The same doctrine also applies to a passenger on board a stricken vessel, the assumption being that the passenger is required to work to save the vessel, because by so doing he is also working to save his own life as well as to save the vessel.

In answer to the second part of your question: yes, there are cases on record when a passenger or a member of the crew were given salvage awards. To mention a few of the outstanding cases:

1. Powle vs. Great Eastern, D. C. N. Y. 1864, Fed. Cas. No. 14,110. In

this rather old case, which occurred on board the famous old ship *Great Eastern*. While on a voyage the ship's steering gear broke down and a young American engineer, who was a passenger on the vessel, rigged a steering apparatus and thereby was instrumental in making it possible for the great vessel to safely reach port. This passenger was awarded a sum of $15,000 for salvaging the vessel; incidentally, he was also working to save his own life, but no point was made of that fact in this particular case. The crew of the *Great Eastern* received nothing; it was part of their job to do all they could to save the vessel.

2. The *Mary Hale:* The mate and four members of the crew of the wrecked vessel were awarded salvage money for crossing the Gulf of Mexico in an open boat in order to procure assistance for their wrecked vessel.

3. The *San Demetrio:* This is a recent and very interesting case that was rendered only last year in British Admiralty. The *San Demetrio,* an oil tanker, was attacked by a German raider in the Atlantic. The ship was badly damaged and caught on fire. The master ordered the crew to abandon ship. Two of the boats disappeared somewhere in the Atlantic during the darkness of the following night. On the afternoon of the second day, the second mate's boat again sighted the burning *San Demetrio*. The second mate and his boat crew boarded the vessel, and, after a tremendous amount of work and sacrifice, they extinguished the fire, got up steam and proceeded towards England at a very slow rate of speed. A homemade steering gear was in use and the second mate was in command. He navigated the *San Demetrio* by means of the stars and from an old school atlas found on board the vessel. All the regular bridge and chart room equipment was destroyed by shell fire and flames. They finally reached the River Clyde. Over 10,000 tons of oil remaining in the vessels cargo tanks, the ship, which was almost new, was in a condition to be repaired. The courts awarded $73,000 to these members of the crew for extraordinary service in saving the vessel—they earned every penny of it.

Dear Skipper:

Is it possible for the crew of a vessel to be awarded salvage money for saving another vessel of the same ownership? In other words, is common ownership a bar to recovery of salvage?

Yours truly,
H. J. L.

ANSWER

No, the right to salvage is not barred by common ownership of the saved and salving vessel. By a Federal Statute—46 USC 727—the right to remuneration for assistance or salvage services shall not be affected by common ownership of the vessels rendering or receiving such assistance or salvage services. This legislation was enacted by our Congress on August 1, 1912. It is to conform with the provisions of the International Convention of the Third Conference on Maritime Law held at Brussels, Belgium, in 1910.

The duty of the ship's crew is to their own ship; it is founded and based upon the contract of employment. Salvage services rendered by the crew in aiding another distressed ship are not regarded as within the scope of their contract of employment. We cannot claim that all the employees of the owner of a fleet owe such a duty to him that no crew member of one of the ships could claim salvage for their labors and risks in salving another one or its cargo.

QUESTION

Can a salvage award be made for the saving of human life alone?

ANSWER

No, the saving of human life alone is a duty imposed upon all seafarers. If human life alone is saved, no matter how heroic and meritorious the service may have been, no enforceable right to salvage can arise. However, if property is also saved, a Federal Statute—46 USC 729—known as the Salvage Act, allows salvors of human life to share in the award, even in cases where the life salvors had no direct part in the saving of the property. This statute was made effective on August 1, 1912, and reads as follows:

Salvors of Life To Share in Remuneration. Salvors of human life, who have taken part in the services rendered on the occasion of the accident giving rise to salvage, are entitled to a fair share of the remuneration awarded to the salvors of the vessel, her cargo, and accessories.

QUESTION

What is the time limit, if any, for a salvage award to be claimed after the rescue?

ANSWER

The Salvage Act of August 1, 1912, places a time limit of two years in which to file a claim for salvage. However, this two-year limitation will be extended if the court is satisfied that delay is excusable because of unavailability of the ship for arrest and seizure.

QUESTION

What elements do the courts consider in order to determine the amount of a salvage award, and how is the award apportioned amongst the various members of the vessel's crew?

ANSWER

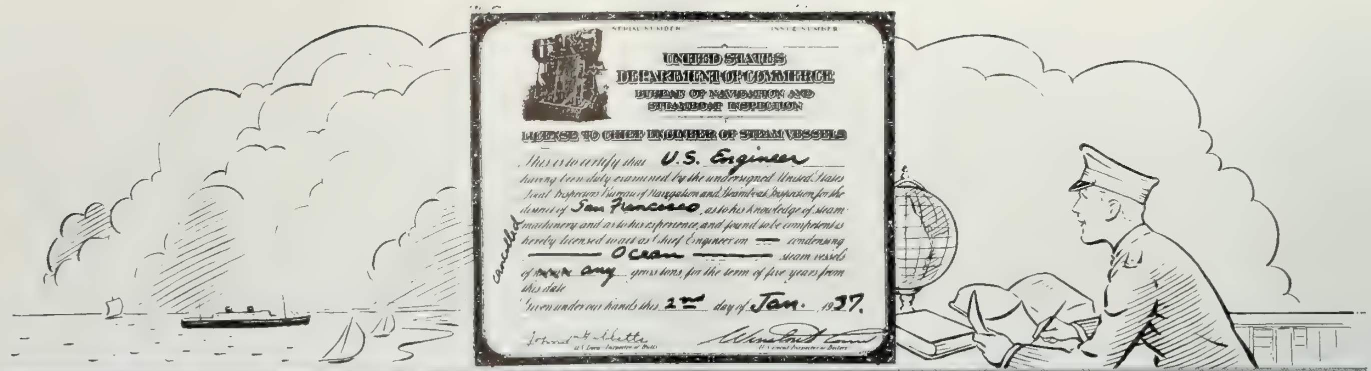
Generally speaking, the courts consider the following elements in arriving at the amount of the salvage award:

1. Steam vessels are always entitled to a liberal award, because the service is rendered by a costly instrument and would be more effective than it would be in the case of a sailing vessel.
2. The amount of labor extended by the salvors in rendering the salvage service.
3. The promptitude, skill and energy displayed in rendering the service and saving the property.
4. The value of the property employed in rendering the salvage service, and the danger to which the property was exposed.
5. The risk incurred by the salvors in saving the property from the impending peril.
6. The value of the property saved.
7. The degree of danger from which the property was saved.

Of course, the owners of the rescuing vessels always receive a substantial share of the salvage award, that on account of the delay and risk to their property.

As a general rule, the members of the crew receive their share in proportion to their wages and position on the vessel. However, should one or more members of the crew perform some service which was of itself largely re-

(Page 89, please)



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UNITED STATES
DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION AND
STEAMBOAT INSPECTION

LICENSE TO CHIEF ENGINEER OF STEAM VESSELS

This is to certify that **U.S. Engineer** having been duly examined by the undersigned United States Local Inspectors Bureau of Navigation and Steamboat Inspection for the district of **San Francisco**, as to his knowledge of steam machinery and as to his experience, and found to be competent is hereby licensed to act as Chief Engineer on — condensing — **Ocean** — steam vessels of ~~[illegible]~~ **any** gross tons, for the term of five years from this date

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ELECTRIC PROPULSION FOR TANKERS

Our last article included a complete schematic diagram of connections for the alternating current part of the electric-drive machinery as installed in modern tankers. Herewith is the corresponding diagram for the direct-current part of this same machinery.

It might be inquired, why do we have so much dc equipment, if we use ac power for main and auxiliaries?

The sole purpose of the dc generators is to supply excitation to the ac generators and motors. On merchant ships, dc is preferable for deck winch power, and perhaps for variable and adjustable speed blower motors. But on the tanker, there is little need for dc power except for excitation. There are a few small dc applications where ac may not lend itself quite so readily as to speed control or storage batteries.

There is no substitute for dc for excitation for ac generators and synchronous motors. It is also used in the means of control of the voltage and power factor.

In reviewing the accompanying diagram, it would be well to have the last article's diagram convenient. In this last article, we described two auxiliary generator sets, Nos. 41 and 43. These sets are each driven by a 525-kw steam turbine. Then, all in line on each set is the 400-kw ac generators, 64 and 65 on this diagram; the 75-kw, 120v dc exciter; and finally the 50-kw 110v dc exciter, 80, 81 and 54, 55, respectively.

One of these sets must be running at all times under way, and when in port, unless the port generator, 50-kw is started up. Either set may be selected by throwing switch 59 selector and switch 100 to transfer main exciters.

Index to Numerical References on DC Schematic Diagram

Numbers from 1 to 53 inclusive are on the ac schematic.

54. Turbine generator auxiliary set No. 1, 50-kw, 110v dc exciter.

55. Same on set No. 2. These exciters supply excitation bus bar No. 62 and what limited dc load there may be on the ship.

56. Manually-operated field rheostat for exciters 54 and 55.

57. Shunt fields of 54 and 55.

58. 600-ampere shunt to supply indicating ammeter on switchboard showing load on 50-kw exciter.

59. Transfer selector switch. Connects either No. 1 or No. 2 50-kw exciter to exciter bus bar, but not both. Blades overlap so that transfer may be made without dropping the load.

60. Circuit breaker, 550 ampere, trips coils in exciter load, but, if overloaded, cuts only the ship's dc 115v bus bar, does not disconnect exciter from excitation bus bar.

61. Circuit breakers, several are indicated by this one which feed miscellaneous dc 115v ship's load.

62. Excitation bus bar 110v dc. Feed fields of both ac auxiliary generators 64 and 65 and fields of main exciters, which in turn excite main generator and motor fields.

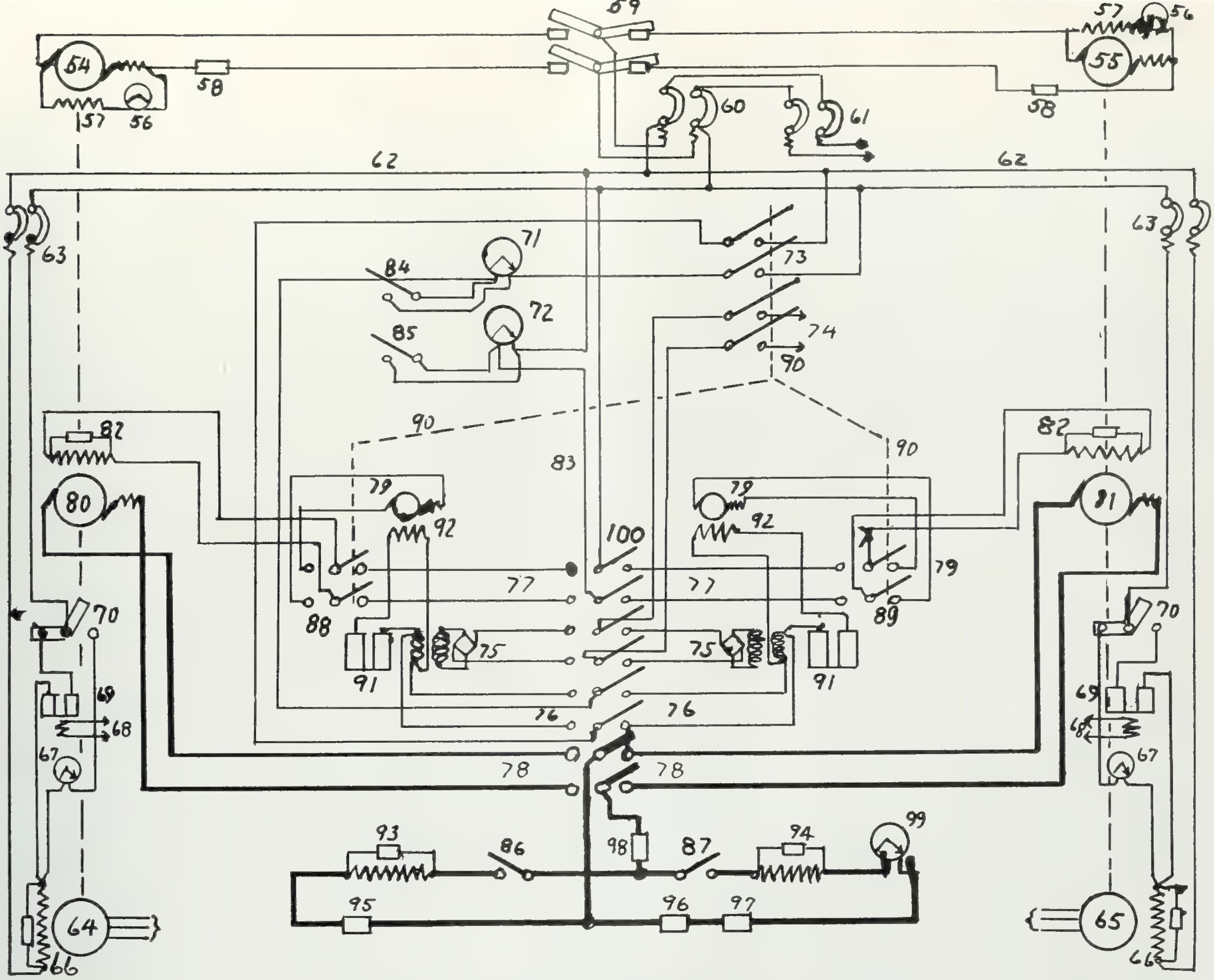
63. Circuit breakers set to trip at four times normal load, hence only on short circuit of some kind. They feed fields of 400-kw, ac, 460-volt generators, Nos. 64 and 65, fields No. 66.

64. 400-kw ac auxiliary generator, 3-phase, 60 cycle, 460-volt, 3-wire.

65. Same as 64.

66. Main fields for 64 and 65. Across these fields is shown the Thyrite field discharge resistor. All fields, because of their electro-magnetic characteristic (inductance), generate a high voltage when their current supply is stopped by opening a breaker. This voltage is discharged in a resistor permanently connected across the field. Its characteristic is such that with the normal volts the resistance is high enough to hold back the current to a reasonable value, but voltages of two or three times normal cause its resistors to drop and carry much current, shorting out the high voltage.

67. Manually-operated field rheostat for 64 and 65 so that the 460-volt auxiliary bus bar voltage may be adjusted and held at correct valve manually. Refer to 68, 69 and 70.



DIAGRAMATIC REPRESENTATION OF DIRECT-CURRENT CIRCUITS

68. Ac coil connected to the potential transformer on auxiliary bus bar, 17 in ac sketch, to supply 115 volts to 69.

69. Automatic generator voltage regulator. This has a variable resistor in the form of stacks of carbon plates which are rocked back and forth to vary the resistance by the pull of the operating coil, 68, thus holding voltage of 64 and 65 constant at the adjusted valve.

70. Double - throw switch which transfers the field from the automatic regulator 69 to the manual rheostat 67.

71. Ceiling voltage rheostat shorted by 84 contact on main operating lever, so that when in the pull in position, the main generator and motor fields have extra high voltage. Same function as 72.

72. Main exciter field rheostat used when excitation is under manual control with switch 88 or 89 thrown to 77, the dc supply for manual excitation control of propulsion motor and generator. This rheostat is shorted on reversing lever to give full ceiling volts to main exciter when running as an induction motor ready to pull into synchronism.

73. Switch in dc supply to automatic control of excitation; i.e., fields of main exciter, 75-kw dc. See 74.

74. Switch is 115 volt, 60 cycle ac supply from propulsion bus bar potential transformers, No. 11 on ac sketch, to ac operating coil of ac propulsion generator voltage regulator, 75 and 91.

Switch 73 and 74 are mechanically interlocked with switch 88 and 89 so that 73 and 74 may not be closed unless 88 or 89 is in automatic position to circuit 79 armature of amplidyne 92.

75. Rectifier to convert the 115 volts ac from propulsion bus bar potential transformer to dc voltage for the automatic propulsion generator voltage regulator No. 91. This rectifier feeds dc to the main coil of regulator shown in sketch. This coil pull is much stronger than, and is opposed by, the pull from the dc coil, shown adjacent to it in the sketch, which gets voltage from the main exciter bus bar through rheostat No. 71. The effect is that the regulator tends to move and hold the propulsion voltage always at a definite ratio to the excitation bus bar, and if the latter is constant, the former will be constant.

76. This circuit feeds dc from dc bus bar and switch 73 to control coil of regulator 91.

77. This circuit feeds dc from bus bar to propulsion exciter when switch 88 or 89 is thrown to the manual position.

78. This is the propulsion main exciter circuit carrying dc from 75 kw exciter to both generator field 94 and motor field 93.

79. Amplidyne exciter armature. This small generator has the peculiar characteristic that for a small current, perhaps an ampere or less input to its field 92, puts out as much as a hundred amperes and the output is always exactly proportional to its input. The output is also a very quick response to the input changes. Thus it is an amplifier or amplifying dynamo, or am-

(Page 89, please)

On the Ways -
SHIPS IN THE MAKING

The Curriers At "Oregonship"

ON MARITIME DAY, May 23, the Oregon Shipbuilding Corporation put three Liberty ships into the waters of the Willamette River, of which one was the S. S. Thomas B. Aldrich (above left). At the ceremonies for the launching of this ship, the Currier family was well represented.

DAVE CURRIER (above), Chief Inspector Pacific Coast District, U. S. M. C., was the principal speaker, and he declared at one point in his speech, "Your record should ring around the world to the joy of our allies, and, I venture to say, to the worry and chagrin of our enemies."

JULIA CURRIER (center), age four, eyes shining, presents flowers to her mother, **MRS. DAVID CURRIER** (bottom), who sponsored the Liberty vessel.

58 Ships Delivered in May

With a total of 58 ships of approximately 632,000 deadweight tons delivered into service in the month of May, American shipyards set a new world's record for the production of steel tonnage during a single month, Rear Admiral Howard L. Vickery, vice chairman of the Maritime Commission, announced on June 3.

Speaking before the Duluth Chamber of Commerce following a double launching of two new coastal tankers at the Barnes-Duluth Shipyard, Duluth, Minnesota, Admiral Vickery said that American shipyards for the month of May had established an all-time world record for total steel tonnage delivered in any one month, surpassing World War I construction records, which were made in 1919 after the war was over.

Pacific Coast yards continued to lead the Victory Fleet parade by delivering 32 of the month's total. The East Coast yards delivered 22 and four were delivered on the Gulf. Of the total, 43 ships were Liberty ships, three were tankers, three were standard design Commission C-type ships, and nine were vessels of the emergency cargo type for British account.

In addition to the deliveries, American shipyards launched 65 vessels and laid keels for 75 new ships. Of the vessels launched, 46 were Liberty ships, 17 were vessels constructed under the Commission's long-range program and two were for private account, while keels were laid for 45 Liberty ships, four for British account, 25 for the long-range program and one for private account.

The continued acceleration of the entire shipbuilding program is indicated by the April delivery figure of

MRS. WM. M. DE FOE, wife of Great Lakes shipbuilder, christening British rescue ship Bold.

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36 ships and 51 launchings as against this month's record. In April the building program exceeded the one-completed-ship-a-day mark. In May, however, the program has been stepped up to virtually two a day.

24 Concrete Cargo Vessels To Be Built

A contract for the construction of 24 reinforced concrete cargo vessels has been awarded to **McCloskey & Co.,** of Philadelphia, Pennsylvania, the Maritime Commission announced on June 11.

The 24 vessels, one of which is to be completed this year and the remainder by June 30, 1943, will be constructed at a new shipyard to be built at Tampa, Florida. The vessels will be 360 feet in length and will have a deadweight tonnage of 5200 tons. They will be single screw and propelled by steam reciprocating engines, smaller than those now installed in the vessels of the Liberty ships.

The decision to construct concrete vessels was reached by the Commission following intensive study of new developments in the handling of concrete.

At the present time the Commission has under construction or contract 33 reinforced concrete barges, which are non-propelled and must be towed.

Coast Guard Cutters

Of 13 new cruising cutters to be built by the Coast Guard at a cost of approximately $30,000,000, 11 are to be built by the **Western Pipe & Steel Co.,** Los Angeles, California, under a contract just awarded, and two are to be constructed at the **Coast Guard Yard,** Curtis Bay, Maryland.

The new cruising cutters will have a length over all of 255 feet, a beam of 43 feet, a draft of 15 feet, and a displacement of 2000 tons. The ships will have turbo-electric propulsion, 4000 shaft horsepower being available in each to turn a single screw.

The contract with the Western Pipe & Steel Co. provides for the delivery of the first vessel by June 1, 1944, the second by July 1, of the same year, and two each month thereafter. The vessels will be named the *Androscoggin, Chatauqua, Huron, Iroquois, Klamath, Otsego, Owasco, Sunapee, Wachusett, Winnebago,* and *Winona.*

The main propulsion machinery and auxiliaries for the 13 cutters will be furnished by the Westinghouse Electric & Manufacturing Co., at a total cost of $3,955,523.

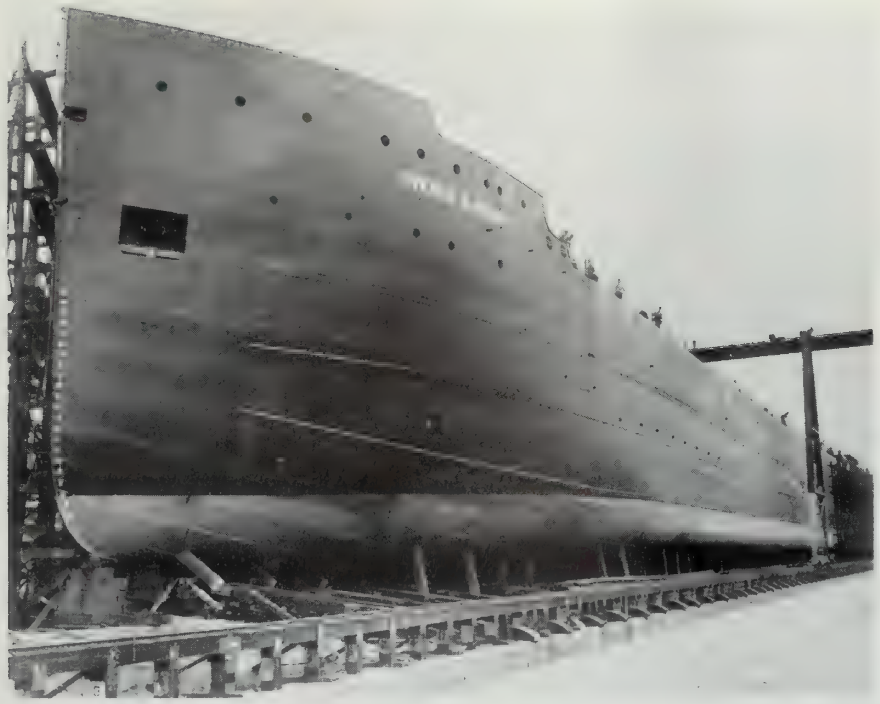
[*Coast Guard Bulletin.*]

Barnes-Duluth Launches First Two Tankers

The first of the Maritime Commission's ocean-going ships to be built on the Great Lakes slid down the ways in a double launching ceremony on June 3 at the **Barnes-Duluth Shipbuilding Company,** Duluth, Minnesota, the Maritime Commission announced.

Two coastal tankers were sponsored by relatives of Duluth's Army and Navy heroes who died in the attack on Pearl Harbor.

The *Mannington* christened by Mrs. Katherine McQuade Berg, sister of Robert C. McQuade, a gunpointer



Ore Carriers Launched

NEARLY A QUARTER OF A MILE of ore-carrying capacity made its first move toward contributing to the winning of the war when the freighters Irving S. Olds (above) and A. H. Ferbert were launched May 22. The former hit the water at the Lorain, Ohio, yards of American Shipbuilding Co., while the latter entered its element at the River Rouge, Michigan, yards of Great Lakes Engineering Works. The vessels were launched almost simultaneously in honor of National Maritime Day. The Lorain vessel was christened by Mrs. Irving S. Olds, wife of the board chairman, while the ceremonies at Detroit were performed by Mrs. Ferbert. The Olds and the Ferbert, together with their three sister ships, are the largest ever constructed on the Great Lakes.

MRS. IRVING OLDS

MRS. A. H. FERBERT

who was killed in action on the United States destroyer *Shaw* on December 7. The *Tarentum* sponsored by Mrs. Catherine W. Walczynski, mother of Andrew Walczynski, who was a staff sergeant at Hickam Field, Honolulu, attached to the 6th Pursuit Squadron, United States Air Corps, also killed in line of duty on December 7.

Those who attended the launching and the dinner included: Rear Admiral Howard L. Vickery, vice chairman of the Maritime Commission; Governor Harold E. Stassen of Minnesota; and Julius H. Barnes, former president of the United States Chamber of Commerce and now president of Barnes-Duluth Shipyard.

The Barnes-Duluth shipyard is building 12 coastal tankers, the two launched on June 3 being scheduled for delivery into actual service within two months after that date. The remaining 10 will be completed by November. The coastal tanker type vessel is 220 feet in length and 1100 gross tons. The ship dimensions permit it to reach the ocean via the Welland Canal.

The Maritime Commission's Great Lakes shipbuilding program to date includes the construction of 78 vessels in all, comprised of 16 large ore carriers, 12 coastal tankers, 27 coastal cargo vessels, 5 harbor tugs and 18 seagoing tugs.

Navy Launchings on San Francisco Bay

On June 4, destined to become another of Uncle Sam's fighting terriers of the sea, the U. S. S. *Hobby*, a new destroyer, was launched from the **Bethlehem Shipyards** in San Francisco.

Named for the late James M. Hobby, U. S. N., a first assistant engineer during the Civil War period, it was sponsored by Mrs. Walter Davis of Abita Springs, Louisiana, who was invited to participate in the ceremony by the Navy Department in recognition of her four sons who are now on active duty with the Navy.

On June 8, one of less dramatic but extremely vital ships of the Navy, the U. S. S. *Cascade*, a destroyer tender, was launched at the yards of the Western Pipe & Steel Company in South San Francisco, sponsored by Mrs. Charles W. Crosse, wife of Captain Charles W. Crosse, U. S. N.

On June 15, taking her place with two sister ships launched only a few days previously, the U. S. S. *Florikan*, a medium sized auxiliary, was launched at the Moore Dry Dock Company in Oakland, sponsored by Mrs. Leo Sahm, wife of Commander Leo Sahm, assistant operations officer, Twelfth Naval District.

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GENERAL ENGINEERING
and DRY DOCK COMPANY

More Contracts

Gunderson Brothers, Portland, Oregon, have a contract for two sea sleds for U. S. Engineers Office, Portland, Oregon, at a price of $10,400.

The Reliable Welding Works, Olympia Washington, were awarded a contract for three additional 75-foot, all-welded steel tugs by the War Department, Washington, D. C.

The Brown Shipbuilding Company, Houston, Texas, were awarded a contract for the United States Navy Department, for 18 new escort vessels.

The Sagstad Shipyard, Seattle, Washington, have contracts for four rescue boats for the United States Army for Air Corps Service. Cost $480,000.

Hilstrom Shipbuilding Company, Marshfield, Oregon, have contracts for three rescue boats by the United States Army for Air Corps Service. Boats will be of wooden construction and cost $360,000.

LAUNCHING OF U. S. S. FLORIKAN, one of the Navy's newest auxiliary vessels, at the Moore Dry Dock Company, Oakland, Calif., on June 14, 1942.

THESE PRETTY MAIDS simultaneously christened their respective vessels in the bow-to-bow launchings. Miss Barbara Fallon (left); Miss Juliet Swigert.

TUG PULLS CHARLES H. SALTER out of basin of Pacific Bridge Company, Yard No. 1, Alameda, Calif.

A Unique LAUNCHING CEREMONY

In one of the most unique launching ceremonies ever held in shipbuilding history, two "coasters" were towed into the waters of the Oakland Estuary on Sunday, May 31, from the Pacific Bridge Co. Yard No. 1 in Alameda, and were christened from a platform lifted by a huge gantry crane and suspended in mid-air between the bow of one ship and the stern of the other.

Both hulls were christened simultaneously by their sponsors. Miss Juliette Swigert, daughter of W. Gorrill Swigert, president of the Pacific Bridge Co., sponsored the *Chas. H. Salter;* while Miss Barbara Fallon, daughter of E. J. Fallon, general manager of the shipbuilding division of the organization, performed the honors on the *Cyrus Sears.*

The two "coaster" type (N3-S-AL) cargo steamers, built for the Maritime Commission, were the first two constructed by the Pacific Bridge Co., and were completed in 59 working days.

Other members of the launching party included Carl Flesher, Pacific Coast director of construction, United States Maritime Commission; James Smith and William Fawke, U. S. Maritime Commission inspectors; Dick Boersig, construction superintendent of the yard; Miss Oleta Elliott, maid of honor for Miss Swigert; Miss Margaret Torrance, maid of honor for Miss Fallon, W. Gorrill Swigert and E. J. Fallon.

The Pacific Bridge Company is one of the oldest construction companies on the Pacific Coast. Founded in 1869 by Gorrill Bros. in Oakland, it played an important part in the early development of the San Francisco Bay area.

In 1890, it transferred operations to the Pacific Northwest where many outstanding construction jobs were completed. During World War I, the company built steel ships, as well as wooden ships for the French Government.

Among the more important construction jobs handled by the Pacific Bridge Co. were the Golden Gate Bridge piers; the Burnside Bridge in Portland, Oregon, spanning the Willamette River; piers for the Ross Island Bridge over the Willamette; a mile of sea wall along the banks of the Willamette; graving docks at Mare Island, San Diego and Pearl Harbor; as well as numerous other projects.

The Shipbuilding Division of the company was formed in November, 1940.

Officers of the Pacific Bridge Co. are as follows: W. Gorrill Swigert, president; A. E. Graham, vice president; R. T. Keenan, secretary; J. J. Harper, treasurer, and T. M. Kuss, chief engineer.

BOW-TO-BOW LAUNCHING

Sponsors' party on platform suspended from crane between the bows of each vessel.

Sub Fleet Approved

Construction of 200,000 tons more of submarines has been authorized by a bill signed into law by President Roosevelt. The exact number of new

(Page 120, please)

Steady As You Go

(Continued from page 81)

sponsible for the success of the salvage operation, then the courts would take the merits of the case into consideration and award these outstanding crew members their proper share equal to what they as individuals deserve.

Should the salvaging vessel or her equipment become damaged in rendering the salvage service, the cost of repairs is usually allowed in addition to the salvage award. The extra fuel and stores used is also added to the award, this of course to repay the shipowner for his loss.

QUESTION

We understand that a salvage award can only be made for saving a maritime object from impending peril. Would this apply to the saving of a vessel undergoing repairs while high and dry in a drydock?

ANSWER

Yes, it would, providing that the salvage service was rendered by persons who were not under any duty and obligation to render the service to the vessel. So long as the vessel is an instrument of trade and commerce she is a maritime object and does not lose her identity as such during the period when she is on drydock undergoing repairs. This latter point was cleared up by the United States Supreme Court in the case of the steamship *Jefferson* in 1909. The *Jefferson* caught fire while in a drydock which was actually dry at the time when fire broke out in the plant. By the time the salvors got to work on the *Jefferson,* the fire had attacked her superstructure. They saved the vessel and were awarded salvage for so doing.

QUESTION

Does property picked up at sea always legally belong to the finder?

ANSWER

No, it does not always legally belong to the finder. It is first necessary to establish whether or not the property is *derelict.* A thing is not *derelict* unless it has been abandoned by the legal owner without any *intention of recovery.* An object, such as a vessel, or cargo, or equipment of a vessel, may be floating at sea for a long time without having been abandoned by the owner without hope or intention of recovery. Maybe the owner is looking for it; if you find it and return it to the rightful owner, then you can file a claim for salvage.

There is a very interesting old case based along these lines and doctrine—Gardner vs. Gold Coins, 111 Fed. 552. The crew of a fishing boat on the Atlantic picked up the floating body of a man. The body was clothed and a wallet containing a considerable sum of money was found in the clothing. The body and the treasure were brought into port and the treasure turned over to the court. Later it was established that the body was that of a man lost overboard from a transatlantic liner; the treasure had originated from a maritime object, the transatlantic liner, so it was the basis of salvage. The courts awarded one-half of the treasure to the crew of the fishing boat.

Problems Answered

(Continued from page 83)

plidyne. It permits the use of a small voltage regulator, 91 handling perhaps less than an ampere of current and yet control the exciter field 82 of perhaps 25 or 40 amperes.

80. Propulsion exciter, 75 kw, 120 volts dc.

81. Same as 80 on duplicate generator set.

82. Exciter field. Note Thyrite field discharge resistor. Refer to description of No. 66 for use of this resistor.

83. This circuit feeds circuit 77 from dc bus bar.

84. This switch is on the operating reversing lever. It short circuits rheostat 71, when the lever is in the induction motor starting position and boosts voltage on propulsion generator voltage regulator which boosts the propulsion voltage to the ceiling or maximum to exert special effort in pulling into step or synchronizing. Used, of course, only while in the automatic voltage control position, switch 73 and 74 closed and 88 or 89 in automatic position, thrown to the circuit 79 position.

85. This is a switch similar to 84, to give the same boost to the propulsion voltage when ready to synchronize but in the induction motor position. This is for use when in the manual voltage control position and switch 88 or 89 is thrown to circuit 77.

86. A large disconnecting switch in main motor field, operated by reversing lever.

87. A large disconnecting switch in main generator field, operated by reversing lever.

88. A double-throw switch for selecting either automatic control or propulsion voltage to the left, or manual control to the right. When thrown to the manual control, the voltage is subject to adjustment on rheostat 72.

89. A switch similar to 88 but automatic to the right, and manual to the left.

90. This line represents a mechanical interlock between switches 73, 74 and 88, 89 to insure that all circuits are complete for automatic control and to the right exciter.

91. Automatic voltage regulator for propulsion voltage control. This is a variable resistance whose valve is governed by the net pull of the two coils, one fed by circuit 76, and the other by 75.

92. Control field of amplidyne 79.

93. Main motor field with its Thyrite resistor. See 66 for explanation of Thyrite.

94. Main generator field with its Thyrite discharge resistor. See 66 for description of Thyrite.

95. Shunt for dc ammeter, 600 ampere capacity at 50 millivolt drop. Motor field.

96. Shunt for dc ammeter, generator field 400 ampere capacity, 50 millivolt drop.

97. Shunt in main generator field, 400 ampere capacity, 240 millivolt drop, used in conjunction with a field voltmeter to indicate ohmic resistance of generator field, hence its temperature.

98. Shunt for dc ammeter reading total current of both fields, 800 ampere capacity, 50 millivolt drop.

99. Main generator field rheostat to adjust the balance of current dividing between generator and motor.

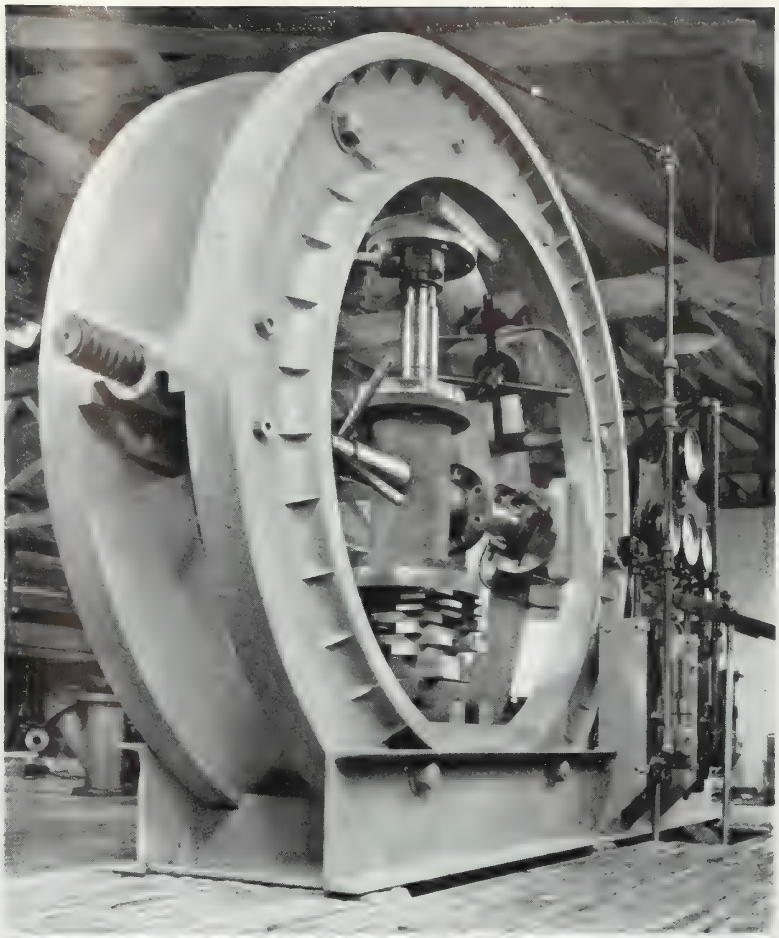
100. This multiple double-throw switch throws excitation and control circuits all together from No. 1 turbine generator set to No. 2 turbine generator set.

Nickeladium steel fittings in warehouse.

Cast Steel and

One of the important lines of manufacture of the Los Angeles Steel Casting Company is composed of valves and fittings produced from "Nickeladium" steel in electric furnaces. Rigid metallurgical control is employed, and physical and chemical reports on every heat are available. Before machining, these products are normalized and drawn in controlled ovens to 140-160 Brinell. Both globe and angle valves are made in this metal. Nickeladium steel fittings are produced by the company in flanged standard and reducing, flanged and welding return bends.

ANOTHER VIEW of supply of cast steel fittings ready for delivery.



VALVE AND FITTINGS test machine, with pumps seen at right.

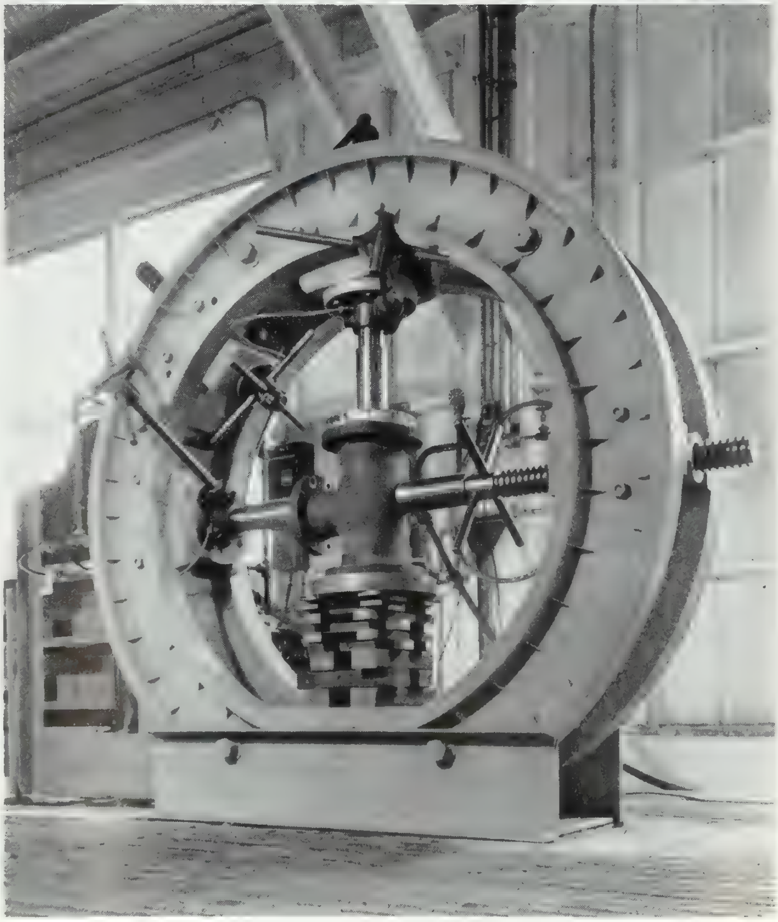
The photographs in their warehouse show many thousands of fittings of various types ready for delivery. These include, in different sizes: 90-deg. ells, 45-deg. ells, tees, crosses, reducers, laterials, etc. Like the valves, these parts are made with walls of extra thickness, and A.S.A. standards are exceeded by from ¼″ to ½″ in wall sections.

The valves are supplied with either of two seat constructions, depending upon the service. The ball type is employed for oil or oil vapor; the plug type is for steam or water.

All valves and fittings are tested hydrostatically to maximum pressure figures established in a table supplied by the firm. These data carry pressures for steam, water, oil and oil vapor for both 150-lb. and 300-lb. Nickeladium globe and angle valves.

Valves Fittings

Two views here reproduced illustrate complete testing apparatus; in this case, large tees are under hydrostatic test. It will be noticed that operating screws and plungers are located at 90 degrees and one additional one at 45 degrees, thus covering the angular range of work tested here. Pumps and pressure gages are located at the right-hand side of the machine. Connections to various plungers or pistons which close the work during test are clearly seen.



VIEW OF TESTING equipment for cast steel valves and fittings.

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An EXCELLENT SAFETY RECORD

Despite the fact that the General Electric Company has more than doubled its man power in the past two years, and has taken on thousands of employees without any previous experience in factory work, the number of days lost due to accidents in 1941, per thousand hours worked, was the second lowest of any year on record.

George E. Sanford, chairman of the general safety committee of the company, who made the announcement, added that the first quarter of 1942 shows a 50 per cent improvement over the same period of 1941.

Lowest year on record was 1940, with no fatalities and only 0.26 days lost per 1000 man-hours. In 1941, including four fatalities, for which the safety record is charged 6000 days each, lost in accordance with national regulations, the severity rate was only .50; for the first quarter of this year it has dropped to .30 days per 1000 man-hours. Accidents are charged against safety record on a prescribed basis, the loss of a hand costing 3000 days, one eye 1800, and so on.

The total number of lost-time accidents, for the first quarter of this year, is only 5.57 per million man-hours worked, or approximately one accident per million hours more than the lowest on record—4.29 in 1939.

Only two occupational fatalities have occurred this year—and one of these was while the employee was not at his regular work, but while he was on his way from one building to another. Previous to this, G. E. ran up 138,000,000 man-hours without a fatality, second only to its record of 157,000,000 hours from 1939 to 1941.

G. E. has had little difficulty with safety problems caused by the influx of green employees since the beginning of the war program. "We recognized during the depression," Mr. Sanford explains, "that business would be picking up rapidly one day, and we got ready for it in plenty of time."

The general safety committee, of which he is chairman, is composed of the safety engineers from indivual G-E plants, who in turn are chairmen of their plant committees. In the largest plant, the works committee, which meets twice a month, is made up of one man from each section of the plant. He then holds one meeting a month with his foreman, in groups of about 20 at a meeting. The foremen pass safety measures on to the men. All employees are encouraged to submit suggestions for safety measures, for which they receive bonuses if the ideas are adopted, and all sections and all plants cooperate in the exchange of ideas and of information on successful safety innovations.

New employees are given a talk, the day they begin work, by the plant safety engineer, or a representative. They receive a booklet on safety regulations and recommended safe practices; and additional instructions are provided for certain jobs. Goggles and other necessary protective clothes are furnished by the company in accordance with the requirements of the job, and safety shoes are made available to employees at moderate cost. Works newspapers feature safety tips and safety cartoons.

Foremen are advised when any changes might affect safety precautions. All accidents are investigated and steps taken to prevent their recurrence.

Not much time is spent on special campaigns. The officials feel that steady pressure initiated by the Safety Department is much more important and more effective, with the foremen dealing directly with the men, and the Safety Department with the foremen.

New A. A. A. Director

Basil Harris, president, United States Lines, has been elected to the board of directors of the American Arbitration Association, Lucius R. Eastman, chairman of the board of that association, announced in New York in May.

Mr. Harris, as a member of the board of directors, will aid in the direction of the administration of the association's important voluntary arbitration tribunals throughout the Western Hemisphere, and its thirty-one offices located in key cities from coast to coast. The national offices are located at Rockefeller Plaza, New York City.

The American Arbitration Association, entering its sixteenth year of providing voluntary arbitration facilities for the use of industry, is a non-profit, non-political organization. Over eight thousand educators, professional and business men—all experts in their respective fields—in almost two thousand cities throughout the United States, Canada and the Central and South American nations, are members of its Panels of Arbitrators, and are available to serve as impartial arbitrators under the rules of procedure of the association.

Divisions of the association operating under the direction of the board of directors are: The Inter-American Commercial Arbitration Commission; Canadian-American Arbitration Tribunal; Industrial Arbitration Tribunal; Commercial Arbitration Tribunal; Accident Claims Tribunal, and the Motion Picture Arbitration System.

Ships Must Come First!

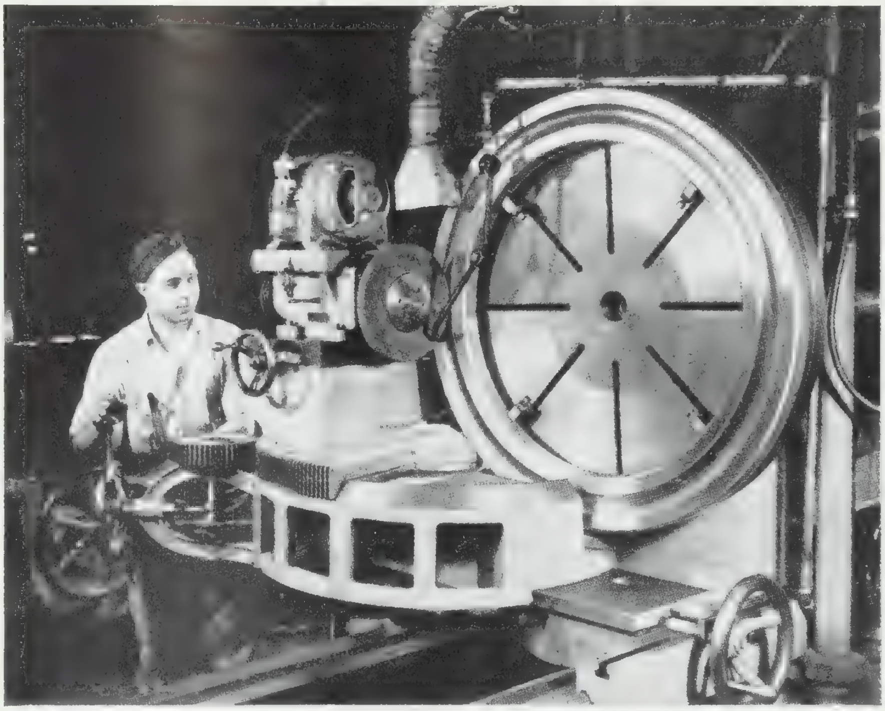
Conserving Precious Steel — Saving Precious Time with

Reground Bearings

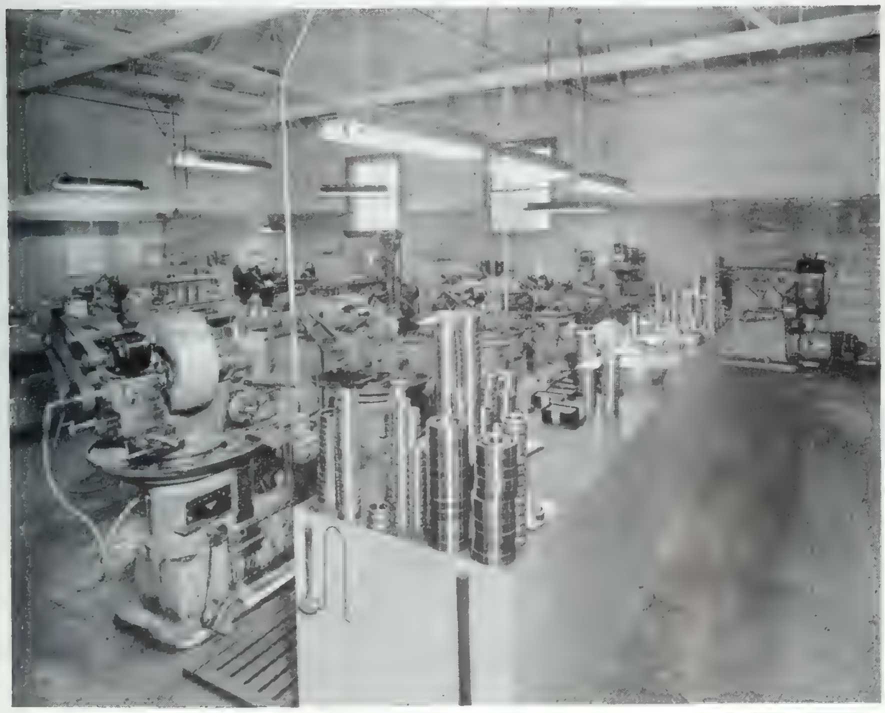
In all the present need for war production and for conservation of vital materials, ships are given the leading place. No war materials or products can get from America to the war fronts without ships. No ships can travel the ocean and handle cargo effectively without machinery. Machinery cannot operate without bearings.

Bearings, particularly ball bearings, are of course indispensible to all classes of machinery—war, industrial, marine. The present great demand in war machinery has placed a serious strain on the existing supply of special steels from which ball bearings are manufactured. It is therefore highly important that all worn or damaged ball bearings be reclaimed, if possible, and made to do efficient duty in America's machinery.

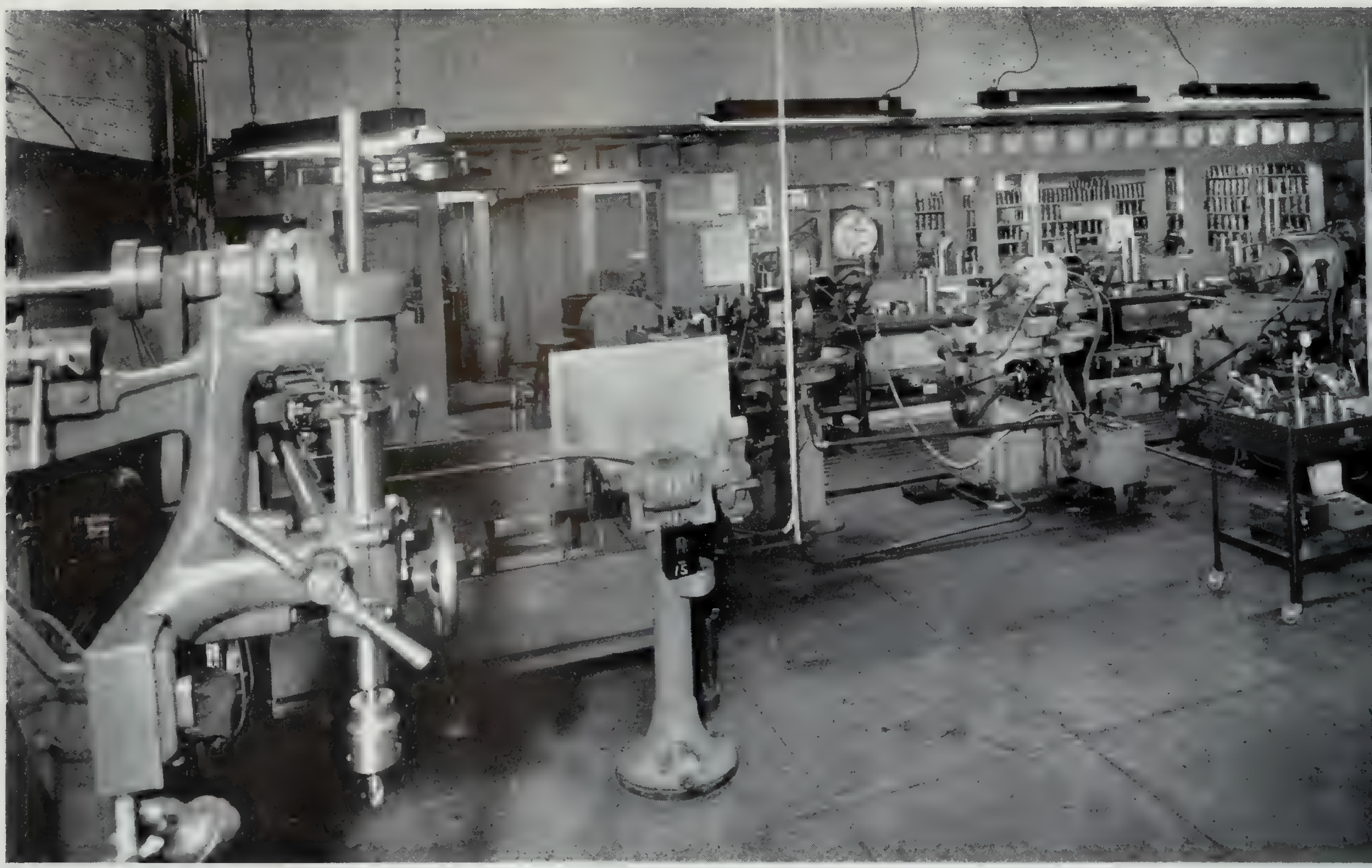
Adjusting its operations to wartime requirements as well as to the demands of its customers, one Pacific Coast manufacturer, Precision Bearings,



CUSTOM BUILT RACEWAY grinding machine at one of the plants which supply PBI. There are few machines of this size in existence capable of grinding raceways in sizes up to 40" O.D.



BATTERY of Van Norman automatic raceway grinding machines. They are fully automatic, with no element of human error possible, as every race is dial checked while in operation, and additional gage checks are made by workmen at various processes.



GENERAL VIEW of the factory, showing the modern trend toward efficiency made possible by equipment, lighting and cleanliness.

RECENT VIEW of home office and factory of Precision Bearings, Inc., in Los Angeles. Our camera shows window displays of victory symbols.

Inc., has greatly expanded its already extensive facilities for regrinding worn ball bearings. Since there are no manufacturers of new bearings west of Chicago, this concern with its five branch offices covering the West Coast from Canada to Mexico has assumed new importance in the defense program in the Pacific area.

On shipboard many electric motors, ventilating fans, centrifugal pumps, worm drives and other power applications are fitted with ball bearings, and because of hard conditions of use, considerable reclamation or replacement is indicated. Shipyards also have many ball bearing applications in shop machinery and in cranes.

"Because of the owner's ability to have their regrinding jobs done on the West Coast, ships have been speeded to sea minus the delays that would have been involved in shipping the bearings east," said one company official. "Idle machine time has been cut to a minimum in defense plants, agricultural implements and mining machinery have been kept in operation with little loss of time for the same reason.

"Ball bearing reclamation is noth-

How One Coast Plant Is Playing Vital Part To "Keep 'em Launching"

ing new, and those who are familiar with it recognize its economy from a maintenance standpoint. Known more familiarly by the trade name 'Precision Ahlberg Ground Bearings' is an unusually interesting and unique process, and when once understood, the advantages, and consequently the reasons for industry's wholehearted acceptance of the idea of using reground bearings immediately becomes apparent. To these advantages of economy and dependability must also be added the fact that these bearings are offered by a company whose personnel is well schooled in the production of ball bearings, due to the fact that a number of their engineering staff have been trained in the parent company's factory and engineering departments."

Ball bearings, like all other moving objects exposed to a rolling or sliding contact, are subject to wear, corrosion, abrasion, or even breakage when at the mercy of overloads and extreme shocks. When any of these disorders occur, the bearing must be replaced promptly if other and more serious damages are to be avoided. The question immediately becomes one of securing a suitable replacement without unnecessary delay, and at the minimum of cost with safety.

Upon their arrival at the plant, worn bearings are disassembled and the old balls and retainers are discarded. The rings are checked for bore and outside dimensions to ascertain if they conform to S. A. E. limits. Inspection is also made to uncover any cracks or burns. After passing these tests, the raceways are ground on Van Norman automatic radius grinders of the type used in new bearing manufacture.

Precision instruments, reading in fractions of tens of thousandths of an inch, are used to gage the raceway diameters and secure proper internal clearances. Extreme care is exercised in the process of fitting with new oversize balls and retainers to give the desired running characteristics of the finished bearings.

After reassembling, the bearings are sound tested, checked for eccentricity, slushed in rust resisting lubricant and wrapped in the same manner as new bearings.

Ball bearings of all makes, including special types as well as those of foreign manufacture, can be reconditioned. Load carrying capacity is increased when larger balls are used. The raceways, themselves, are service proven and any flaw which would cause cracks or warpage has made its presence known and been eliminated.

Officials of the Los Angeles concern declare that thousands of tons of partly fabricated high grade steel can be saved annually by the regrinding of bearings that heretofore would have been discarded. At the same time, the pressure is relieved on thousands of men and machines engaged in other branches of vital war work.

PMR *goes to the Bilge Club Field Day!*

by Paul Faulkner

PRIZE DRAWING conducted by Jack Malseed, "Nip" McHose, and Capt. T. W. Peters.

A day of recreation and relaxation for more than four hundred members of the famous Bilge Club and their guests was staged on Saturday afternoon and evening of June 20 under sunlit skies and amid the beautiful surroundings of Palos Verdes Country Club.

As we express words of appreciation for the tireless efforts of Bilge Club "Prexy" Captain T. W. Peters and his capable and hard-working crew comprising the numerous committees—all hands who took part in the gala outing exclaim in unison that "It was the best big day, from all standpoints, in the club's history!"

Here are the committee chairmen who worked long and hard and made the big event so successful: Billy Wickersham, Honorary General Chairman; Captain T. W. Peters, General Chairman; Joe Costello, Assistant General Chairman; Walter Richards, Sr., Chairman, Barbecue; Charles Houghton, Chairman, Golf Handicap; Jack Malseed, Chairman, Gold Tournament; Hal Bowen, Chairman, Prizes; John Marshall, Chairman, Attendance; John Eidom, Chairman, Reception; Floyd Nelson, Chairman, Entertainment; Ed Whittemore, Chairman, Baseball; Jim Craig, Chairman, Rules; Carl Morabito, Chairman, Grounds; Win Rash, Chairman, Finances; Al Boro, Chairman, Publicity; Jim Smith, Chairman, Program; T. W. Buckholz, Chairman, Tug-of-War.

The winning baseball squad was under the careful eye of Captain Kelly Kellenberger. The Tug-of-War was conducted by T. W. Buckholz, who has won wide attention in this grueling sport. "This sport is no snap," stated the losing team.

All the above outlined athletic action built up plenty of reason for the barbecue staff headed by Chief Steward Walter Richards, Sr., and the big special steaks, scallops, corn-on-cob, beans, keen sauces, home-made apple pies, with lots more fancy "trimmings" made the barbecue held in a grove of trees the "eat'n'est" affair on record.

With the marvelous barbecue safely stowed, Pres. "Cap" Peters mounted the platform and launched a great program of entertainment numbers, and took special care to lead a cheer for Bilge Club members now in the armed forces. Among the guests in attendance were representatives of all branches of the Navy, Army, Air Corps, Marines and special services.

To capable "Nip" McHose went the post of prize awarder, and master of ceremonies, and he did a swell job, making every winner feel like a champ, and the huge audience cheered and issued intermittent spoofing. Prize Chairman Hal Bowen had rounded up a wealth in grand prizes—and many a participant took home a War Bond,

WALLACE I. (Brownie) Atherton, San Francisco, and "Cap" T. W. Peters.

HANDICAPPER CHAS. Houghton does not see it the same way as J. O. McDonald.

JIM SMITH (Hammond Lumber Co.) and Paul Faulkner.

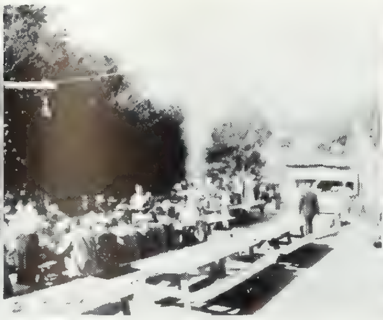
JIM SMITH and Ray Mitchell.

I. B. WELANDER, Capt. S. A. Kennedy, Capt. Pray, Capt. T. W. Peters.

"NIP" McHOSE, Norman Springer, Don Montague and R. Bivens gave us a good theatrical performance.

BILGE CLUB

LOS ANGELES HARBOR



and high rate War Stamps to prove to the missus his skill and prowess. Andy Wilson won a special cooks' prize. The boys gave Charlie Houghton a big cheer on his accurate handicapping for the golf forces. Study the net scores and you'll see his uncanny calculations guarding old man par.

•

"CAP" T. W. PETERS welcomes the members and guests to the 13th Annual Barbecue.

On the facing page:

Upper left: In this group are Colton Reed, Joe Barry, J. O. McDonald and Charlie Dole. PMR's Paul Faulkner, left front.

Left upper center: The foursome W. H. Emerson, C. J. Harmer, Ed Lloyd, and Otto Miller.

Left lower center: Look at those boys pull!

The sextette lower left: Brownie Atherton, Al Johnson, Chas. Dilke, Joe Barry, Carleton Reed, and Jim Smith.

Upper right: H. H. Hughes (Hammond Lumber Co.), R. E. Spencer (U. S. Navy), Ira Henry (Hammond Lumber Co.), and Karl Hald.

Right upper center: A glimpse of the attractive Palos Verdes Course, with the Bilgers tossing the divots.

Right lower center: The Tarzans in the front of this stalwart group are: F. Schiebe, "Mickey" Littlefield, and Dake Dicker.

Right lower view: A. B. Hesford, T. W. Buckholz, Capt. Pray, "Herb" Pickering and Fred Maurer.

JULIUS EICHOM, Ray Mitchell, W. H. Emerson, R. K. Malone (seated).

E. J. McKEE, R. K. Malone, Jim Smith.

WAITING for the baseball game to start.

CAN YOU RECOGNIZE Port Pilot Oliegreen, "Mickey" Littlefield, F. Leheibe, Capt. Muller, John Marshall, Joe Moody, Capt. S. A. Kennedy, and Banning Young?

BILGE CLUB
LOS ANGELES HARBOR

CAPT. BIRD, Jim Craig, Chas. Houghton, Brownie Atherton, Paul Faulkner.

JOHNNIE EIDOM MISSES one that Catcher I. B. Welander is sure to get.

ED HELLENBERGER makes a dash for third base.

GOLF TOURNAMENT RESULTS

Members—0 *to* 20 *Handicap*

1st Low Net: Charles Donetti 83-16-67
2nd Low Net: Leon Brown 85-17-68
3rd Low Net: Leon Munson 83-14-69
4th Low Net: Wm. McAdam 90-20-70
5th Low Net: Roy McCall 84-14-70
6th Low Net: Al Boro 89-18-71
7th Low Net: Carl Reid 87-16-71
1st Low Gross: James Stevenson........81
2nd Low Gross: John C. McHose........82

Members—21 *and up (Handicap)*

1st Low Net: Ivor Bill 98-29-69
2nd Low Net: Charles Gardner ..101-28-73
3rd Low Net: Paul Faulkner 103-27-76
4th Low Net: E. R. Nelson 108-32-76
5th Low Net: Dr. Kocher 101-24-77
6th Low Net: Capt. A. B. Court ..109-32-77
1st Low Gross: Ray Mitchell 97
2nd Low Gross: Nick Trutanich 98
Special Award, Highest Score, won by E. L. Archibald with 148.

Guest Flight—0 *to* 20 *Handicap*

1st Low Gross: Dick Thompson 72
2nd Low Gross: Cliff Reid 78
1st Low Net: Wally Fox 84-15-69
2nd Low Net: F. C. Meyer........86-17-69
3rd Low Net: Ronny Fox 81-12-69
4th Low Net: C. J. Harmer.......87-17-70

Guest Flight 21 *and up*

1st Low Net: Walter Wood 97-28-69
2nd Low Net: R. M. Gane 102-32-70
3rd Low Net: A. M. Rosenfeldt...114-40-74
4th Low Net: M. V. Moulton.... 96-22-74
5th Low Net: Frank Freeman 104-30-74
Special Award, Highest Score: Dr. Jacobs, 125.

The Pacific Bridge Co. Shipyard No. 1 in Alameda is the first Bay area shipyard to go "Over the Top" on the War Bond drive.

Passing its quota of 90 per cent June 14, the Alameda organization is now staging an intensive drive to increase its percentage in the campaign.

At the present time 91.90 per cent of the employees are purchasing the War Bonds weekly.

Emmett J. Fallon, general manager of the organization, is highly gratified over the showing made by the employees in the War Bond activity. He said:

"The cooperation of the men and women employed by the Pacific Bridge Co. Yard No. 1 is outstanding. We are behind the war effort in every way possible, doing a job of buying war bonds as well as building ships."

Joins P and A

Gordon Rowley, president of the Pacific Traffic Association, has resigned from the Waterman Steamship Agency to accept the district manager's position with the Pacific and Atlantic Shippers. Rowley has long been prominent in local traffic affairs, having formerly been district agent for McCormick S. S. Co.

●

PRINCIPALS IN THE LAUNCHING CEREMONIES of the S. S. John Page, launched by California Shipbuilding Corporation on May 19 at midnight, for the United States Maritime Commission, are, left to right: Fred A. Hooper, president of the Propeller Club of the United States and District Manager of the American-Hawaiian Steamship Company; Mrs. Fred A. Hooper, sponsor; Mrs. Harry Dorr, matron of honor; A. O. Pegg, outfitting manager at Calship; and John A. McCone, executive vice president at Calship.

●

Navy "E" For Three Farrel-Birmingham Plants

In recognition of excellence in the production of gear drives for Navy ships, the three plants of Farrel-Birmingham Company, Inc., at Ansonia and Derby, Conn., and Buffalo, N. Y., have been awarded the "E", traditional Navy symbol for a job well done. Shown here with the Navy "E" burgee at the presentation ceremonies on May 10, are, left to right: A. G. Kessler; Captain L. F. Small; Karr Parker, president of Buffalo Chamber of Commerce and chairman of the presentation ceremonies; C. Wayland Brooks, United States Senator from Illinois, principal speaker of the occasion; Commander Robert S. Smith, Jr.; Lieutenant Commander William J. Conners; Captain Frederick L. Oliver, inspector of Naval material, Pittsburgh district; William Shea and Rear Admiral Henry A. Wiley.

J. F. GOVAN

A frequent visitor to the Pacific Coast, J. F. ("Jack") Govan, president of Xzit Sales Company, came out during June for important sessions in the Los Angeles Harbor and Bay ports of call. The Xzit organization, with agents in all maritime districts of the nation — on the Coast from Alaska to Chile—reports fast acceptance of their new product, Petroflo, which keeps oil in proper suspension and prevents sludging.

ENS. B. N. DE ROCHIE, JR.

From the staff of Pacific Marine Review to the U. S. Naval Reserve, Ensign De Rochie has recently completed intensive training specializing in merchant marine battery training. His new orders bring him back to the Coast during July.

Diesel Engine Corporation Announces Change in Name

On June 1, the Rogers Diesel and Aircraft Corporation became the new corporate name of The Cummins Diesel Engine Corporation of New York. The corporation operates two New York plants, 1120 Leggett Avenue, and 724 Garrison Avenue, with offices situated at the former address.

Originally formed in 1934 as a distributing organization for Cummins Diesel Engines, the corporation has since enlarged its scope of operations and its facilities to the point where a new corporate name was needed to describe more adequately the nature of its business.

Although continuing as a distributor for Cummins engines, Rogers Diesel and Aircraft Corporation now represents Enterprise and Sheppard Diesel Engines also, and, in addition, manufactures a complete line of gasoline and diesel-driven generator sets and power and pumping units.

In announcing the adoption of the new name, Ralph B. Rogers, president of the corporation, said that "The new corporate name does not mean that any reorganization or change of ownership has taken place. Management, products and policies are in no way affected."

Navy "E" For Foster Wheeler

The award of an "E" for excellence to Foster Wheeler Corporation by the Navy Department, came recently as the culmination of fifty years service in supplying equipment for the ships and yards of the Navy.

In 1891 the Carteret, New Jersey, shops built the condensers for the armored cruiser *New York*, which later became the flagship of Admiral Sampson at the battle of Santiago in the Spanish-American War. At least four men in the Foster Wheeler organization have worked through three wars for the Navy and other Government departments—certainly a record that is hard to beat.

At present, the new and greatly enlarged shops are producing steam generators, condensers, distillers, pumps and their auxiliaries for the great ships of the Navy, for the U. S. Maritime

(Page 96, please)

On land . . . at sea . . . or in the air!

Hidden rocks and reefs are dangerous . . . so are little grains of sand. That is why the Maritime Machinery (especially Naval) is guarded against stranding . . . fuel and lubricating oils are clarified centrifugally . . . the Sharples way. ¶ The Chemical Process Industries are avoiding needless large manufacturing inventories . . . taking less time for production . . . and turning out a better product . . . by effecting separation and clarification centrifugally . . . the Sharples way.

THE SHARPLES CORPORATION

SHARPLES

★ CENTRIFUGAL AND PROCESS ENGINEERS ★
2326 WESTMORELAND STREET · PHILADELPHIA · PA.
LONDON PARIS ~~TOKIO~~
NEW YORK BOSTON PITTSBURGH CLEVELAND DETROIT
CHICAGO DALLAS SEATTLE SAN FRANCISCO LOS ANGELES

Representatives throughout the world

Commission and for the U. S. Coast Guard.

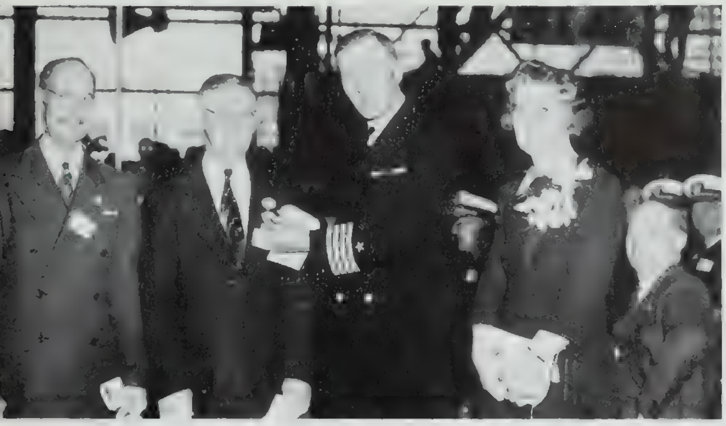
The official award was made in the new erecting shop at Carteret on May 12 before about 2000 employees and guests.

Vice Admiral Samuel M. Robinson, with staff of officers, came from Washington for the ceremony, and a number of other officers from the Third Naval District were also in attendance. The program was brief and snappy, excellent music was furnished by the band of the Carteret High School, and the assembled company sang "America" and "The Star-Spangled Banner." As the last notes of "The Star Spangled Banner" faded away, a shriek from the whistle of a traveling crane jumped the shops once again into full speed upon war production.

NAVY "E" CEREMONY at Carteret works, being addressed by Mayor J. W. Mittuc

The setting was most unusual, being held in the midst of heavy equipment in all stages of manufacture. Employees used the chairs so far as the seating capacity would accommodate them, and then overflowed upon the apparatus, up the steel framework of the building and even onto the overhead cranes to get vantage points from which to view the ceremony. Loud speakers were provided in order that all might hear.

After the program, invited guests were entertained at a buffet supper at the Baltusrol Golf Club, Springfield, New Jersey, and slogan of the day was that voiced by Chairman Brown, "Keep 'em steaming."



CAPTAIN B. H. BRUCE, U. S. N., congratulating Charles S. Messick upon award of Navy "E" insignia. At left John Beech, at right Mrs. Vera Donovan.

Brief addresses were made by the Mayor of Carteret, Congressman Eaton of New Jersey, after which Vice Admiral Robinson presented the burgee to Mr. J. J. Brown, chairman of the board, Foster Wheeler Corporation, explaining the Navy's appreciation of what had been done and its anticipation of even higher records to be reached.

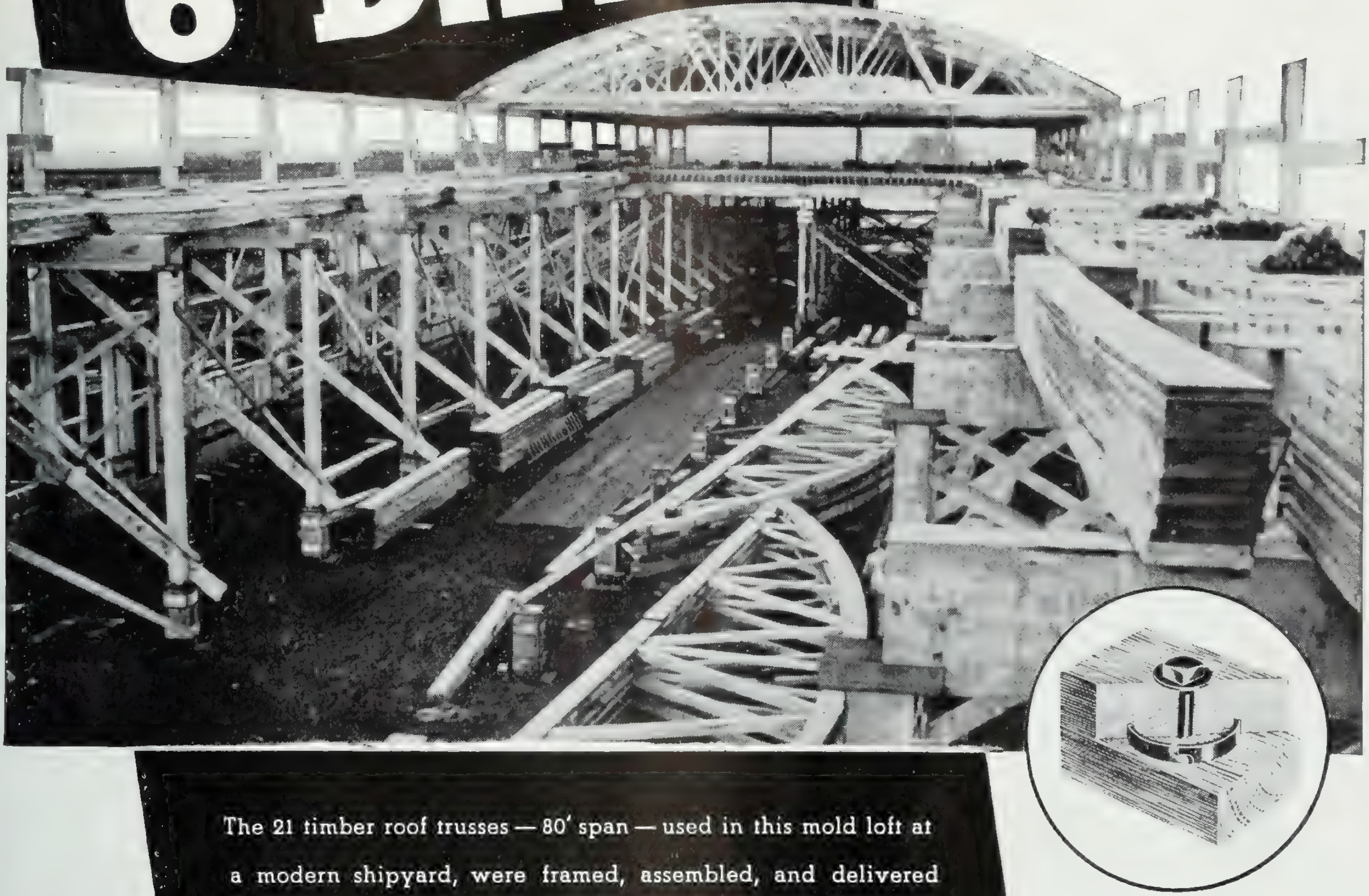
The pennant was accepted by Mr. Brown and raised upon the flagstaff at the left of the platform, as the band played "Anchors Aweigh."

Captain B. H. Bruce, U. S. N., then awarded Navy "E" insignia to Messrs. Messick and Beach, both of whom joined the Carteret works in 1892, and to Mrs. Vera Donovan, Mr. Messick's daughter, representing the women.

VICE ADMIRAL S. M. ROBINSON, U. S. N., congratulating Mr. J. J. Brown, chairman of the board, Foster Wheeler Corporation upon award of the Navy "E" burgee.

DELIVERED IN

6 DAYS



The 21 timber roof trusses — 80' span — used in this mold loft at a modern shipyard, were framed, assembled, and delivered ready-to-erect in 6 working days after final lumber delivery.

Speedy and efficient construction of buildings ranging from small storage sheds to giant mold lofts, like this, is assured through use of the TECO Connector System of Timber Construction and a new engineering service offered to users of wood.

For complete information on how the TECO System can help solve your emergency building problems, fill in and mail the coupon.

The TECO Ring Connector spreads the load on a timber joint over practically the entire cross-section of the wood.

Timber Engineering Co. of California
85 Second Street, San Francisco, Calif.

Timber Engineering Company
Washington, D. C. Portland, Oregon

7-CC

TIMBER ENGINEERING COMPANY, Yeon Building, Portland, Oregon
Please send us complete information on the TECO Connector System of Timber Construction.

INDIVIDUAL..

FIRM..

STREET....................CITY....................STATE.............

WITH THE EXPANSION of the plant facilities of General Engineering and Dry Dock Company at San Francisco and at their Alameda shipyard has come modern new offices of which these views are typical. PMR's photographer staged these shots at the GEDDCO quarters at 1100 Sansome Street in San Francisco.

YOU CAN GET

GRUVAGRIP

PIPE COUPLINGS

Despite Present Material Shortages

Save

WEIGHT
TIME
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SHIPS FOR VICTORY

The Quick Method of Leak-Proof Connections using Grooved End Pipe

Gruvagrips can be used in place of flanges in ship construction . . . when flexible connections are needed, and where it is necessary to uncouple and recouple frequently.

Suitable for lines aboard ship carrying water, salt water, air, natural gas, crude or fuel oil or corrosive fluids. Gruvagrips provide a tight seal even during the movement of the pipe ends caused by expansion and contraction in the line, and allow a deflection of approximately 3 degrees over the various sizes for restricted flexibility at the joint.

Now available with a *synthetic* gasket for almost unlimited life—the Gruvagrip itself can be completely salvaged. No skill is required for installation—a socket or open-end wrench does the job. IMMEDIATE DELIVERY. Write to nearest address below for full information.

G·B MFG.CO.

GUSTIN-BACON MFG. CO.
KANSAS CITY, MISSOURI
CHICAGO NEW YORK SAN FRANCISCO TULSA FORT WORTH HOUSTON

The Freight Forwarders contingent of the Pacific Traffic Association held the June meeting of this active group at a dinner on Tuesday evening, June 9.

Robert Tuggy of the Wells Fargo Carloading Company, program chairman, arranged for a two-hour session of variety entertainment, comedy, music and song.

The Fraternity Club of the Palace Hotel was the scene of the celebration.

War Bond Record

The establishment of a new record for California and probably for the Pacific Coast, for the purchase of War Bonds under a Payroll Savings Plan was established in Napa this month when 99 per cent of the employees of the Basalt Rock Company pledged to buy some $56,000 in Bonds monthly at the issue price, or the equivalent of 14 per cent of the concern's payroll.

The "OVERLAND"
LIFE SAVING SUIT
to Keep 'Em Floating

Incorporating
all the new protective features, including attached rubber gloves, recommended by the United States Coast Guard.

Other Features

Rubber-coated on strong fabric . . . One piece including hood, gloves and boots . . . Made in one large size to accommodate all wearers.

Requires only a fraction of a minute to put on. Special "Rope Pull" closure . . . Suit is pulled on over clothing and Shoes . . . Light Weight—Strong —Durable.

Approved by the United States Coast Guard

The Good Luck — GOODALL RUBBER CO. INC. G R Co INC. — Sign in Rubber

Goodall Rubber Company, Inc.
SEATTLE LOS ANGELES SAN FRANCISCO
Mills TRENTON, N. J. Established 1873

Frank Holm, loaned by the Fireman's Fund Group of fire and casualty companies to the Treasury Department's Northern California War Savings Staff, conducted the four-day drive at the shipbuilding plant to establish the record of having 1996 employees out of 2016 approve regular allotments out of wages for Bond purchases.

The achievement was heralded with an "Over the Top" rally at which employee representatives of the firm were presented with the Minute Man flag by Deputy Administrator William V. Regan. Holm, addressing the crowd during the rally, said, in part, "A sign-up of some 1996 employees, representing over 99 per cent in a period of four days, is a real accomplishment! But as great as this accomplishment may be, I am far more impressed with the enthusiasm and the earnestness with which you have done this job. That's the kind of enthusiasm that will do more than buy bonds—it will build more and better American ships in the American way—ships that are so badly needed to win this war."

News of The Mariners Club

The next luncheon-meeting of The Mariners Club of California has been announced for Wednesday noon, July 1, at the customary meeting place at 140 Battery Street in San Francisco.

President A. T. "Tom" Hunter will present a motion picture program, which sounds like a triple feature from where we sit! The films are titled *Life of MacArthur, The Bombing of Manila* and *Fighting the Fire Bomb,* presented through the courtesy of the Standard Oil Company of California.

Chairman R. H. Glissman of the luncheon committee and Secretary-Treasurer of the Club, N. O. Gunderson, are admonishing all members to save Friday, July 17, for the summer Frolic of the Mariners, which will be staged at The Venetian Villa, down near Hunter's Point. Those of us who attended last year's merrymaking will anticipate a grand old time. Come aboard, Shipmate!

All-Position Electrode For A-C Arc Welding

An all-position, high-quality alternating-current electrode, Type W-26, extending the advantages and convenience of high-quality ac welding to both vertical and overhead positions, has been announced by the General Electric Company.

Alternating-current arc welding has already demonstrated its advantages for work in the horizontal and flat positions. The W-26, developed after intensive research, fulfills a long-felt need for a vertical and overhead ac welding electrode that would give a high-quality job from the standpoint of physical characteristics as well as easy operation, adequate penetration, and practically flat fillet contour.

Type W-26 electrode complies with the requirements of the following specifications: A. W. S. Filler Metal Specification E6011; Navy Bureau of Ships Specification 46E3, Grade 3, Class 1; and the A. S. M. E. Boiler Code, Paragraph U68.

By the use of this electrode, welding shops and fabricators, who have heretofore needed to supplement their ac welders with stand-by dc welders for high-quality work in the vertical and overhead positions, will now be able to release these machines for fabrication work where dc welding may be essential.

Type W-26 electrode compares favorably with the highest quality vertical and overhead welding characteristics available from reverse polarity direct-current electrodes. It provides a strong, forceful arc having good fusion, excellent penetration, and uniform characteristics free from arc blow. It is now available in $\frac{1}{8}''$ and $\frac{5}{32}''$ diameters; other sizes from $\frac{1}{16}''$ to $\frac{1}{4}''$ are expected to be available shortly.

Welds made with this electrode of the $\frac{5}{32}''$ diameter show the following average physical properties, the data being obtained from all-weld metal test specimens in the "as welded" condition.

Ultimate tensile strength, 72,000 lb. per sq. in.

Yield point, 60,000 lb. per sq. in.

Elongation in 2 inches, 26 per cent.

Reduction of area, 46 per cent.

Announcing

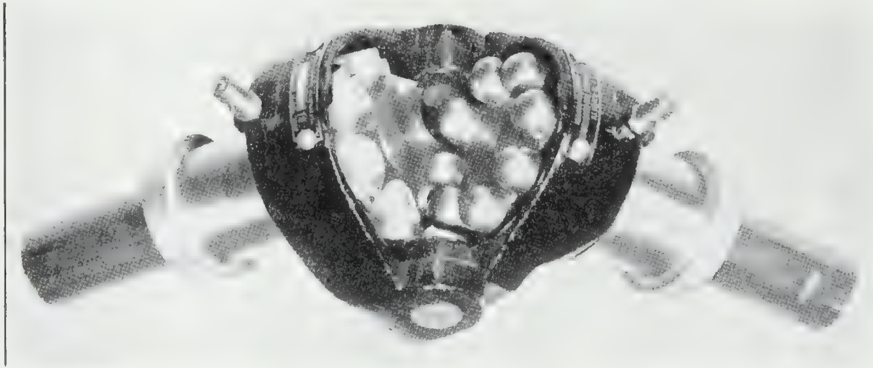
the appointment of the

BROOKS EQUIPMENT CORPORATION OF CALIFORNIA

as Pacific Coast distributors of

Consolidated Ball Tooth Joints

for the remote manual control of inaccessibly located valves, sliding water-tight doors, steering gears, etc.



CONSOLIDATED BALL TOOTH JOINTS

- Adopted by the Navy and many thousands furnished and being furnished for the U. S. Maritime Commission ships.
- Write for Bulletin containing sketches, breakdown loads and other data.

★ *Prompt Shipments* ★

BROOKS EQUIPMENT CORPORATION OF CALIFORNIA

461 Market Street GArfield 8542
SAN FRANCISCO, CALIFORNIA

Keep Posted!

Recent Development in Ship, Yard and Dock Equipment

NEW MARINE SEARCHLIGHT

New 18-inch Searchlight

For use aboard ships, a new 18-inch incandescent searchlight with pilot house control or flat base, is announced by the Westinghouse Lighting Division, Cleveland, Ohio.

Intense beam concentration is obtained by a primary precision-ground and polished silvered-glass reflector, and a metal secondary reflector to permit continuous operation with lamps up to and including 1500 watts. A tandem reflector shield, mounted in the center of the primary reflector, eliminates all secondary heat concentration on the lamp bulb. Heat dissipation is by radiation, permitting a dust-tight enclosure.

Body and back sections of the housing are of sheet steel. Door and door frame are of cast iron with integrally cast hinge and lathe lugs. The door is clamped in position against a weather-tight heat-resisting gasket of graphitized asbestos.

The lens is of heat- and impact-resisting polished glass, mounted against a weather-tight gasket and held in position by steel spring clips. Primary reflector is a 19-inch parabolic, commercial-precision mirror coated with silver and sealed by an electrolytic coating of copper and synthetic material. Secondary reflector is of polished metal and provides high reflectivity.

The body is supported in a steel bow with locking handles to position the luminaire at any fixed elevation and rotation. Socket assembly is the standard mogul bipost-type rated at 50 amperes, 600 volts. It is normally fixed in position but is independently adjustable for elevation and rotation.

All castings and sheet parts are finished with one coat of red lead oxide and two of weather-proof green paint. Hardware is galvanized or plated.

New Mill Rolling Ship Plates

Another step in the completion of a large expansion program, started in 1940 by the Tennessee Coal, Iron and Railroad Company, subsidiary of United States Steel Corporation, was taken May 26 when plates started rolling from the new 140-inch, four-high plate mill installed under that program. This mill will add approximately 50 per cent to the company's present plate producing capacity and will do its part toward relieving the present demand for plates for ships and other war purposes.

"We are most happy," stated Robert Gregg, president of the Tennessee company, "that we are able to dedicate the product of still another facility to the efforts of our country in its fight on the Axis."

This mill is part of the Tennessee company's expansion program announced in November, 1940, which included, among other items, a new blast furnace and an additional battery of coke ovens, already completed and placed in service.

Heavy Demand For Testing Machines

Shipments of Baldwin Southwark Testing Machines for the first four months of 1942 were the largest in the company's history, and 57 per cent ahead of the first four months of 1941, it is announced by Francis G. Tatnall, manager of the testing machine division, Baldwin Southwark division of The Baldwin Locomotive Works.

The company shipped 88 standard universal machines in the first four months of 1942, as compared with 56 during the first four months of 1941. The great increase in production can be seen when it is realized that in the whole of 1939, 65 machines were delivered—a new high in testing machine shipments up to that time.

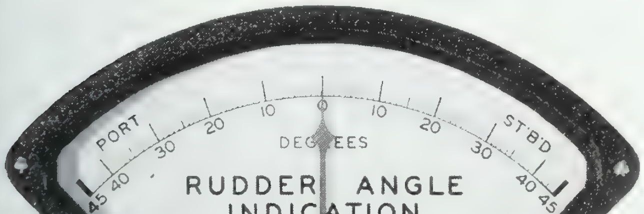
Mr. Tatnall says that "a large number of these machines were delivered to regular users of testing equipment, who are faced with increased testing work. Other machines went to firms which had not required extensive testing of ferrous and non-ferrous metals before the war. Southwark engineers had cooperated with these latter firms in helping them to establish testing routines for the materials being used."

These powerful and accurate machines are used extensively in the aircraft, automotive and shipbuilding industries and for testing concrete, ceramics, plastics, rubber, as well as ferrous and non-ferrous metals.

Vital for the HELMSMAN!

In these days of convoys it is vital to know the exact position of the rudder at all times. This new type of rudder angle indicator, using hydraulic transmission, is RUGGED, SELF-CONTAINED and needs NO OUTSIDE SOURCE OF POWER.

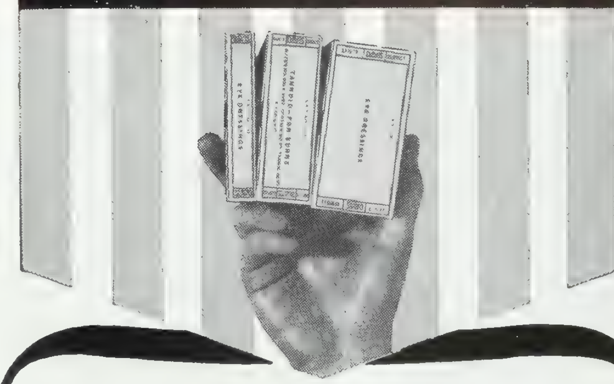
Information on The Liquidometer Position Indicating System will be sent on request.



THE LIQUIDOMETER CORP.

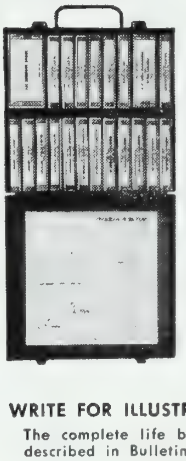
Marine Dept.
SKILLMAN AVE. at 37th ST., LONG ISLAND CITY, N. Y.

LIFE BOAT AND LIFE RAFT KITS



Original Interchangeable System

☆ The original interchangeable unit system of First Aid, first introduced by the Davis Company, is now available in kits for life boats and life rafts, specifically designed to meet the requirements established by the U. S. Coast Guard Bureau of Marine Inspection and Navigation. All kits are waterproof. The kits for life rafts have specially waterproof-packaged inside units to doubly protect the contents. Cases are made of heavy gauge metal to withstand severe usage.



Kit No. X-170, above, is designed to meet the minimum requirements for life boats. Specify No. X-170-W for life rafts.

Kit No. X-171, left, is for large life boats. Specify X-171-W for life rafts. Kit No. X-145 contains a special assortment as selected by the Marine Surgeons of two well known oil companies.

WRITE FOR ILLUSTRATED BULLETIN TODAY

The complete life boat and life raft kits are described in Bulletin No. 314. Your copy will be sent promptly on request without obligation.

53 HALLECK STREET, NEWARK, N. J.

Davis Emergency Equipment Co. Inc. Chicago • Newark • Houston
DAVIS PROTECTION
Davis Emergency Equipment Co. Ltd. San Francisco • Los Angeles

New Glass Flood Light

A new glass flood light combining the high reflectivity of silvered glass with unusual resistance to shock has been announced by the Lighting Division of the General Electric Company. The new unit was designed to eliminate vital materials needed for war effort.

Although the reflecting surface is made entirely of glass, it is completely shatter-proof. The reflector is coated by electrolytically deposited metal which together with an overall backing of porcelain enamel will keep the glass from shattering even if it is broken by a severe blow.

The reflector is joined to a metal socket housing which is thoroughly sealed with a heat-resistant gasket and which acts as a preventive against the entrance of water, making the flood light corrosion-proof. Door glass and gasket fit solidly against the reflector, further assuring protection against water, dust or dirt. This flood light, said to be from 10 to 30 per cent more efficient than all-metal units, utilizes 300- or 500-watt lamps. It is known as G-E Type L-49.

Laminated Spars For Mine Sweepers

Light in weight, but with great structural strength, the laminated spars which are going into some of Uncle Sam's new mine sweepers and other Government boats are being constructed on the Pacific Coast of selected spruce and synthetic resin glue.

The spars are hollow, have scarf joints, and are turned by hand. They are being used by the Beaver Boat Works, the Albina Engine and Machine Works, and Commercial Iron Works, all of Portland, Oregon, who have contracts for constructing Government ships.

The spars are built square of different pieces of lumber glued together with Lauxite glue, then rounded off. They run from 15 feet to 60 or 70 feet in length, with diameters of 4″-5″ to 10″-12″.

The quick-setting waterproof glue used to bond the spars is manufactured by I. F. Laucks, Inc., Seattle, Washington, world's largest manufacturer of water-resistant glue. This glue is also used for bonding laminated boat frames, etc., and was formulated for a variety of special machine-gluing jobs—joining and edge gluing.

Two New Flame-Cutting Tips Announced by Airco

Two additions to their line of oxy-acetylene flame-cutting tips have just been announced by Air Reduction. The first, known as Style 108, is ideal for working in close quarters. It is bent in an offset shape, to permit cutting along a line 21/32-inch from the vertical centerline of the torch head or barrel. This offset design meets the problem of cutting close to bulkheads, flanges or shoulders where the radius of the torch head would prevent alignment of the cutting orifice vertically over the desired line of cut.

The Style 108 tip has milled flat sides, with two preheat flames, and is suitable for either machine-cutting or hand-cutting operations. It is available at present in sizes Nos. 1 to 3, for cutting steel up to 1½ inches thick.

The other new addition to the line is the Style 139 straight tip with one preheat orifice, for certain machine or hand cutting operations. This is a companion tip to the recently announced Style 119, which carries two preheat orifices. Made in sizes Nos. 0 to 3, Style 139 is particularly adapted to splitting angle iron, straight-line cutting using a straight edge as a guide, or sheet metal cutting operations, in which light preheat is desired.

MARINE CABLE

FLEXIBLE -

WATER-PROOF -

ACID-RESISTANT

IDEAL for use on ships and docks. The water repellent gaskets between armor and conductors prevent deformation of the armor and prevent creeping and opening up of armor under severe vibration. The bond is so tight that corrosive liquids, gases and moisture cannot seep into junction boxes. The armor is ideal for synthetic and asbestos covered wires. Spiralok conforms to Shipboard Cable Standards and meets requirements of Marine Inspection and Navigation.

Spiralok

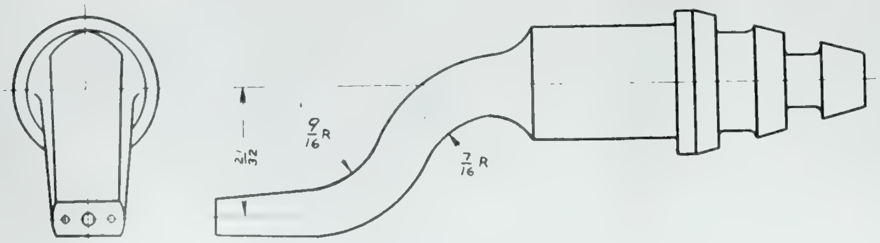
Look for "Spiralok" stamped on the armor

●

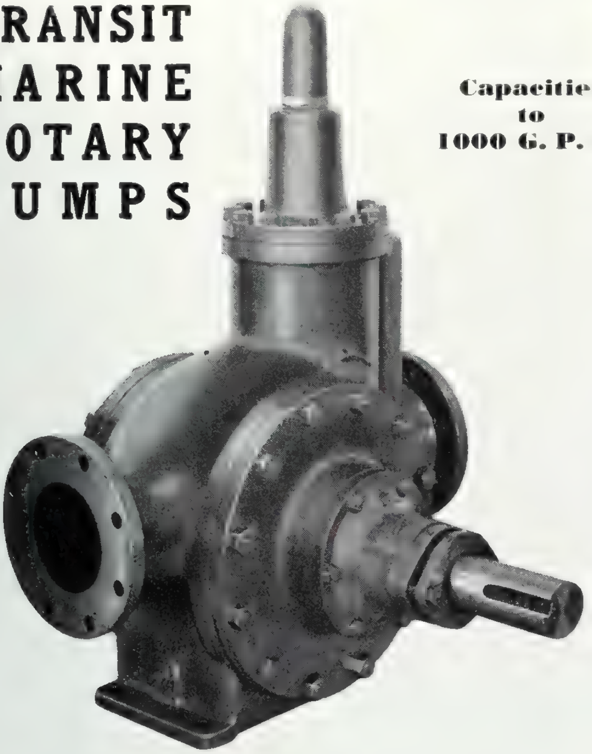
Write for quotations for either bronze or steel armor Spiralok.

AMERICAN METAL MOULDING COMPANY

146 COIT ST. IRVINGTON, N. J.



OXY-ACETYLENE FLAME-CUTTING TIP



**TRANSIT
MARINE
ROTARY
PUMPS**

**Capacities
to
1000 G. P. M.**

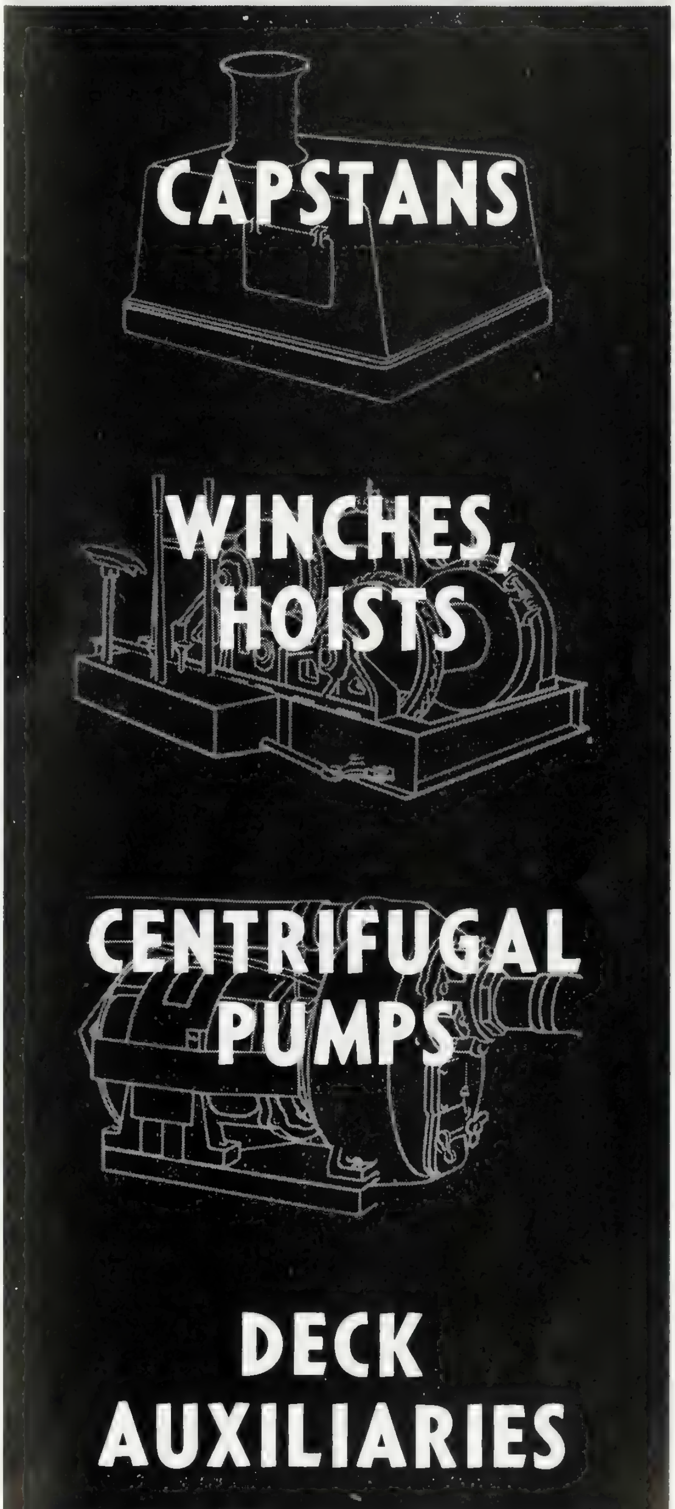
National Transit Pump & Machine Company
OIL CITY, PENNA.

★ ★ ★

*Buy Your
Next War
Bonds
Today!*

★ ★ ★

JAEGER



CAPSTANS

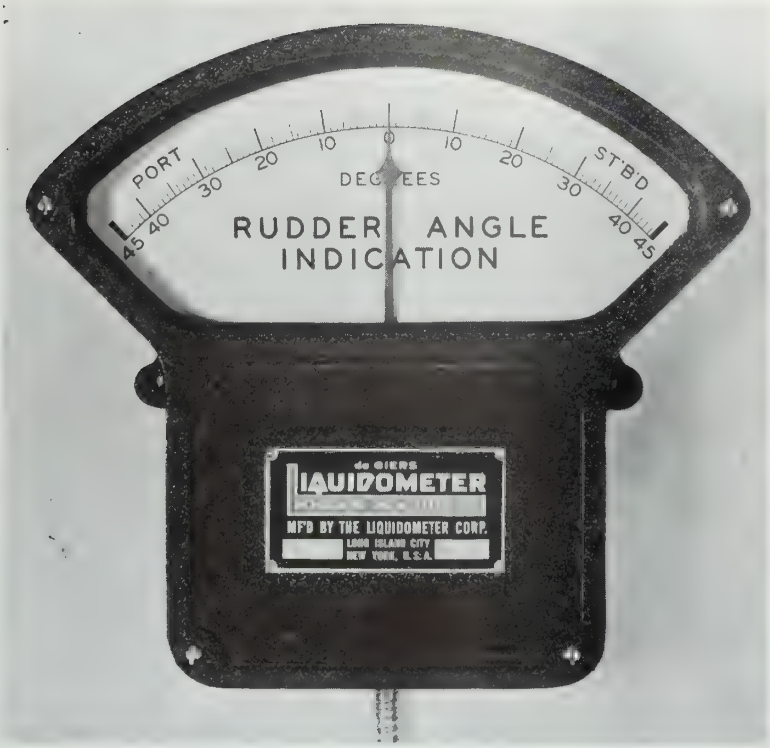
**WINCHES,
HOISTS**

**CENTRIFUGAL
PUMPS**

**DECK
AUXILIARIES**

OUR ENGINEERS ARE AT YOUR SERVICE

**THE JAEGER MACHINE COMPANY
907 DUBLIN AVE., COLUMBUS, OHIO**
Branches and Service in 100 Principal Cities



New Type of Hydraulic Rudder Angle Indicator

In these days of convoys and blackout operations it is extremely vital to our victory program to save both the fuel and the time a cargo ship consumes in getting to its destination. By staying on a true course, a ship saves this valuable time and fuel. One of the greatest aids in holding a vessel on its course is a dependable Rudder Angle Indicator.

To meet a long-felt need for an accurate, simple and dependable rudder angle indicator, the Liquidometer Corporation has adapted its balanced hydraulic transmission system to this field. This proved method of transmitting motion has been used for years by this company for transmitting the position of floats used in its liquid level tank gages.

The advantage of balanced hydraulic transmission for bringing the position of the rudder to the wheelhouse or other desirable location is that this unit is self-contained, and does not depend on any outside source of power for its operation. Neither does it employ any gears, sheaves, pulleys, wires, or other cumbersome means of transferring motion. The system is completely temperature compensated and sealed. While this means of transmitting the rudder position is rugged in construction, the indicator responds to the slightest motion of the rudder; there is no lost motion nor delayed action. Communicating tubing can be run along walls or under decks or concealed in conduits and an approved stuffing box is used to pass the tubing through watertight bulkheads.

The instrument is equipped with a white dial with black graduations. It has a pointer travel of 10 inches. Indirect illumination with a suitable dimmer can be supplied where desired. The standard dial is one with graduations up to 45 degrees port and starboard. Special dials can be had for this indicator for any range in degrees both sides of center. The standard indicator comes equipped for panel mounting, but flush mounting can also be supplied where required.

New Special Duty Pump Units Developed

Danger of incendiary bombs has brought to home owners, shipyard managers and municipal officials alike the importance of ever-ready pumping equipment in case of fire.

Recently developed fire-pumping units by Fairbanks-Morse now afford small plants and towns adequate fire protection at a moderate cost. In the past, small plants and municipalities have found that standard pumping station equipment has been too expensive and too complicated for their means and needs.

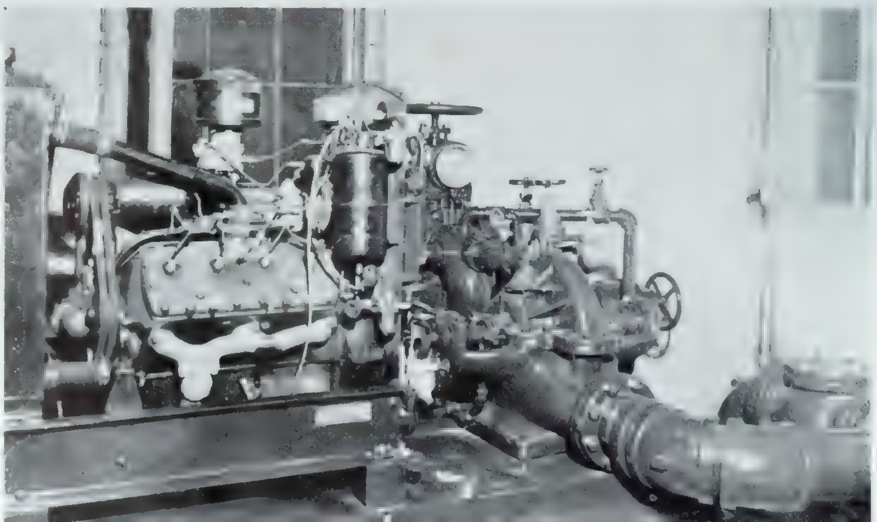
One of these new Fairbanks-Morse fire pumping units, approved by the Underwriters Laboratories was recently installed in Delavan, Wisconsin. It is composed of a 4-inch F-M Fire Pump, driven by a Ford-Mercury engine. The Mercury engine drive, turning at 2500 rpm, is of sufficient speed to be direct connected, eliminating the expense of gear drive necessitated when a slow-speed engine is connected to a high-speed pump. This simplicity represents a great saving in installation and maintenance costs over regular fire pump units. As an added advantage to users there are service stations with stocks of replacement parts for the Ford engine in practically every village in the country.

Portable Pumping Unit

In response to considerable demand, Fairbanks-Morse has also developed a portable pumping unit which may be adapted to a variety of service, municipal and otherwise.

A good example of this type of unit was recently assembled for Waverly, Ohio. A 2-inch, non-clogging F-M sludge pump was direct connected to a 3-hp F-M splash-proof motor and

NEW MERCURY ENGINE-DRIVEN FIRE PUMP



Keep Ships In Service

The resistance of HUNT-SPILLER Air Furnace GUN IRON to friction wear has proved to be a vital factor in the operating efficiency on Diesel and Steam reciprocating engines.

Cylinder Liners—Pistons—Packing Rings and Cylinder heads made from this material will give maximum service between renewals, aid in the reduction of fuel and lubrication costs and help to keep your vessels in service at a time when all are needed.

We are prepared to furnish castings in the rough or machined for any size or type of engine.

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South Boston, Mass.

THOS. G. BAIRD
16 California Street
EX-1142
San Francisco

HUNT-SPILLER Air Furnace GUN IRON

mounted on a standard warehouse truck with 8-inch rubber-tired wheels.

The centrifugal pump is primed by means of a bracket-type hand-operated piston pump mounted on the truck platform with its suction connected to the top of the volute through a ¾-inch pipe line equipped with a shut-off valve. The sludge is picked up through a length of 2½-inch wire-lined rubber suction hose, and discharged through a length of 2½-inch collapsible cotton fabric hose. The discharge hose is fitted with a gate valve to control the head under high suction life conditions and to seal the discharge of the pump during priming operations.

Deck Cleats of Laminated Wood

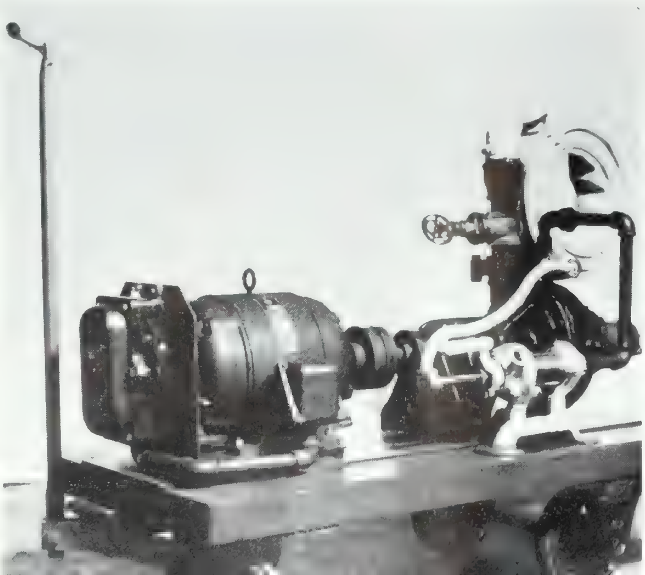
Besides constructing homes, airplanes, boats, etc., of wood and glue to save iron and steel for ammunition, many manufacturers of "parts" and smaller items are also turning to wood and glue as alternates for metal.

One of these items, slated to be on the market soon, is a boat deck cleat made of laminated wood. Designed by J. L. Mosdell, boat builder of Nanaimo, B. C., and constructed in the laboratory of I. F. Laucks, Ltd., Vancouver, B. C., this plywood cleat, bonded with a cold-setting urea resin glue, is stronger by weight and less expensive than the usual iron cleats, which must be galvanized to resist the corrosive action of salt water.

Boat cleats have been made of solid wood; however, these have not been very successful as they had to be quite bulky to prevent shearing at the narrow section. They could not withstand constant rubbing action of ropes on the sides, although the end grain of the wood resisted rubbing action well.

Laminated cleats, with the grain of wood in one ply at right angles to the grain of the adjacent ply, presents the end grain wood on all four edges. This

(Page 110, please)



IN SHIPYARDS, on docks, or at any place where temporary drainage is necessary, and for any number of other tasks where a portable pump is required, this compact unit meets the need.

"*Liberty*"

TURBINE AND GEAR PLANT DEDICATED

AMERICA'S WILL and capacity to build ships will not only be an important factor in winning the war, but after it is won will "restore America to a dominant place in world commerce," declared Admiral Howard L. Vickery, vice chairman of the Maritime Commission, speaking before a group of Government officials and war workers in the new merchant marine plant of the Westinghouse Electric & Manufacturing Company on May 22.

Admiral Vickery called the Westinghouse plant, built to produce propulsion equipment for Maritime Commission vessels, "one answer by American industry to the President's call for 23,000,000 deadweight tons of new merchant shipping by the end of 1943.

"You men of Westinghouse are making it tougher for Hitler every day. Never before has America or any other nation mustered so great a force into a shipbuilding effort, either for war or for peace.

"So efficiently have modern mass-production methods been applied to shipbuilding that ship production time, from keel laying to delivery, has been cut from original schedules of five months to three and one-half months, and would soon be slashed to the point where new merchant vessels will go into service less than 75 days from the time their keels are laid."

BEHIND GLASS AND STEEL, turbines and gears to drive the nation's fleet of new cargo ships are being made.

WELDERS fabricate a heavy fixture used in assembling the huge marine turbines that will go into the Maritime Commission ships.

The dedication ceremony was held between the first and second work shifts at the new plant, when one group was going home and the other was reporting to take up the production task. A crowd of several hundred workers, all wearing the Maritime Commission's "Ships for Victory" buttons, listened to the Admiral's talk.

The speakers' rostrum was erected on the "production line" of huge machine tools that have been moving into the plant ever since last year. It was sandwiched in between an 18-foot horizontal planer and a 100-inch vertical boring mill, both used for machining large turbine castings and forgings.

During the ceremony, a 21-year-old machine tool operator, George Katzianer, as a representative of the large group of industrial trainees who have been recruited to man the new plant, spoke briefly to his fellow workers.

Admiral Vickery was presented by Ellis L. Spray, manager of the Merchant Marine Division of the Westinghouse Company, who described the record-breaking speed with which the plant was built and equipped for production.

The plant turned out its first turbine parts the middle of last January, just 65 days after the erection of the first steel columns on Armistice Day, 1941. During construction, an average of 200 tons of steel was erected daily, with peak days reaching more than 400 tons. Ground was broken at the tract on the eighth of August, 1941. The plant was built at a cost of $26,000,000 with funds supplied by the Defense Plant Corporation, and is operated by Westinghouse for the Maritime Commission.

The dedication ceremonies were preceded by an inspection tour of the plant, led by Mr. Spray and A. W. Robertson, chairman of the board of the company, who later addressed the workers and visitors.

The Merchant Marine Division of the Westinghouse Company is one of more than 30 different plants located in 23 cities. The company is currently devoting more than 95 per cent of its productive capacity to war output, and has been converting its plant from normal production since the middle of 1940.

HARDWOODS **GENUINE WHITE OAK IS AVAILABLE in BENDING OAK · PLANK · TIMBERS**

We have ample stocks reserved NOW for all Government boats.
We are prepared to supply your requirements on time.
We have seventy years of experience behind us.

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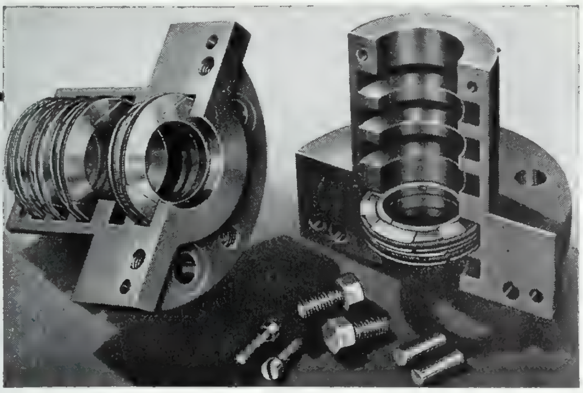

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Los Angeles—A. C. Elder, 2714 South Hill St. PRospect 9529.
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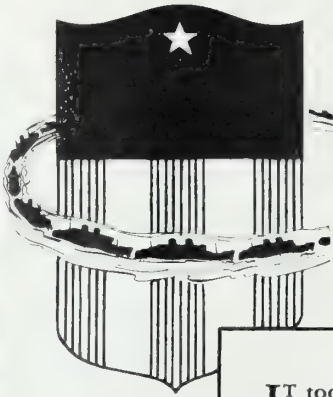
THE FRANCE PACKING COMPANY, Tacony, Philadelphia, Pennsylvania

Original FRANCE METAL PACKING



FORGED INTO THE NATION'S ARMOR

IT took 63 years in the service of HAWAII and the South Pacific, to develop the MATSON ring of ships. It took fewer minutes to forge this ring into the Nation's armor.

Since December 7, our fleet of freighters, and our passenger liners, LURLINE, MARIPOSA, MONTEREY, MATSONIA, have been transporting mountains of war material, and legions of men, across menacing seas, up to the battlefronts.

All freight shipments are under Government supervision until victory. Consult our freight department for details regarding freight movements to ports we serve.

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No matter what the type of ship . . . there's an Exide Marine Battery designed to give it dependable service. Reasonable cost, plus long and trouble-free operation, make Exide the wise choice aboard vessels of every size.

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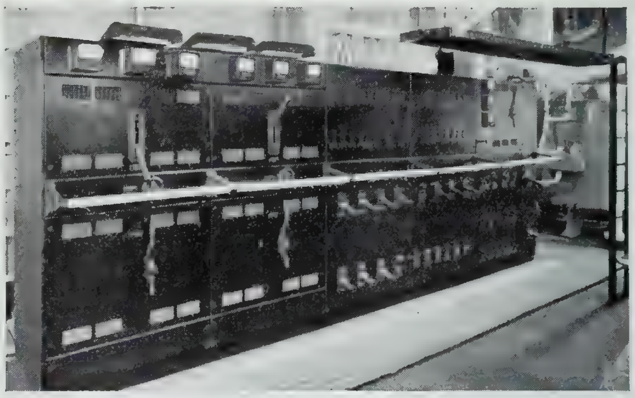
BUILDERS OF ELECTRICAL SWITCHGEAR FOR *Marine* SERVICE



More than 40 years of specialized work in design and construction of marine switchgear. Each board is built as a unit; delivered ready to install. All circuit breakers are built-in, fully enclosed in steel.

I-T-E CIRCUIT BREAKER CO.
PHILADELPHIA, PA.

KEEP POSTED

(Continued from page 107)

has strength in two directions, resists splitting and is pliable.

Laucks engineers glued up a block of laminated plywood with waterproof glue for a trial cleat, sawed the block to the desired shape, and gave it a coat of Rez, synthetic resin sealer. This cleat—18 inches long, 5½ inches wide and 6½ inches high—was tested and found very satisfactory. For small boat construction, these deck cleats are expected to be manufactured in lengths of 10, 12, 15 and 18 inches.

* * *

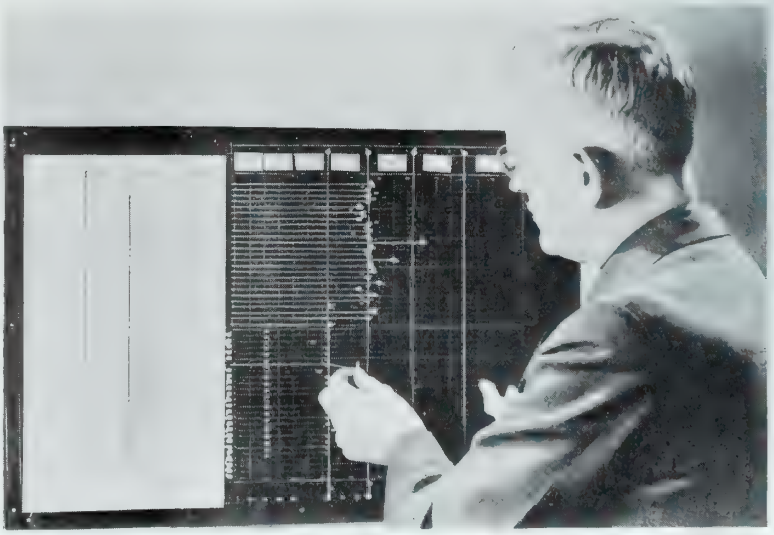
"Produc-Trol Prevents Bottlenecks

Busy industries in every classification, working on both war and civilian orders, are welcoming the new "Produc-Trol" system.

Use of this ingenious device enables production and purchasing executives to quickly see all facts concerning raw materials, parts, assemblies, machine and man hours. Information of this kind is especially essential where multiple-shift production is maintained.

"Produc-Trol" lists parts, assemblies, subassemblies, or individual operations on a part, at the left of the board. Movable tapes, working from left to right on pulleys, bring all pertinent facts into instant focus. Double rows of peg holes under the movable tapes, and various colored pegs, permit many arrangements of comparative data and control, required for any operation.

These units can be ordered in sizes to fit specific needs; models are also available for individual and group incentive plans. Booklet giving complete data and specifications available from Wassell Organization, Westport, Conn.



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Superintendent: E. Thorsen.
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Chief Engineer: L. R. Zimmerman.
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Assistant General Manager: Albert Bauer.
Naval Architect: Gene Wallace.
Chief Engineer: A. R. Neiman.
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Vice Pres. and Gen. Mgr.: P. E. Voinot.
Yard Superintendent: E. H. Rich.
Naval Architect: George Nickum.
Chief Engineer: A. C. Nation.
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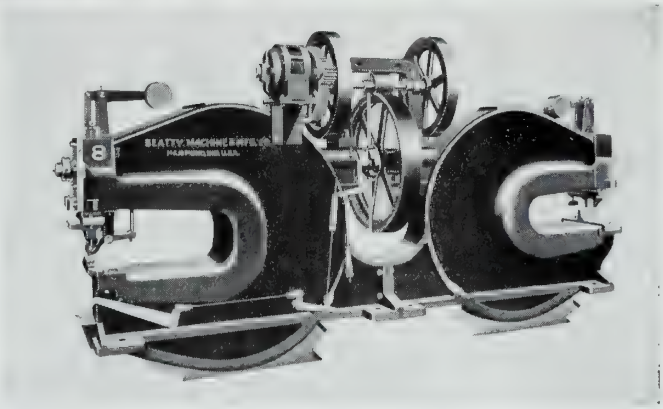
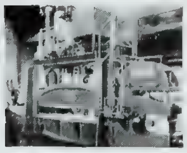
"SIAMESE TWINS" Doing Double Duty



This BEATTY Double End Punch conserves floor space, reduces man power required for operation. Machines are timed to punch alternately. Machine is available with plain table or architectural type table at either or both ends . . . interchangeable tools provide punching or shearing on either or both ends. Available in a full range of throat depths. Widely used in the shipbuilding, tank, railroad, and aircraft industries. This model is one of a complete line of Detail Punches, Single End Punches and Shears, Beam Punches, Flush Front Shears, Horizontal Punches and Heavy Duty Plate Shears. If you have a heavy metal fabrication problem, call in a Beatty engineer.

BEFORE YOU BUY SEE BEATTY FIRST



Illustrating, left to right: 1. Beatty Hydraulic Brake and Flanging Machine. 2. Self-Contained Hydraulic Press. 3. Extruding Press. All are available in a complete range of sizes. Write for bulletins.

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Secretary-Treasurer: Ernest Collins.
Office Manager: Earl Harris.

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Business Manager: Carl B. Winge.
Production Manager: Oscar E. Olson.
Plant Superintendent: L. Vadset.
Purchasing Agent: Eldon Erickson.

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Secretary: J. F. Reis.
Naval Architect: F. R. Huntington.
Assistant General Manager: Albert E. Bauer.
Superintendent: Russels Hoffman.
Purchasing Agent: Fred Lord.

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Vice President: A. E. Graham.
Manager: E. F. Fallon.
Chief Engineer: John Hanson.
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PACIFIC CAR & FOUNDRY CO.
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PACIFIC COAST ENGINEERING CO.
Oak & Clement Sts.
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Manager: Albert Webb.
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Chief Engineer: Patrick Kelley.
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PREFABRICATED SHIPS, INC.
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RELIABLE WELDING WORKS
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RICHMOND SHIPYARD NUMBER ONE
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Richmond, California
President: Henry J. Kaiser.
Vice President & Gen. Mgr.: Clay Bedford.

RICHMOND SHIPYARD NUMBER TWO
of Richmond Shipbuilding Co.
Richmond, California
(Same Management as Number One)

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of Kaiser Co., Inc.
Richmond, California
(Same Management as Number One)

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Manager: James N. Johnson.
Naval Architect: Dean B. Johnson.
Chief Engineer: Charles Herms.
Purchasing Agent: Harry Plumberg.

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Vice President: Robert Scobie.
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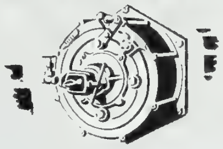

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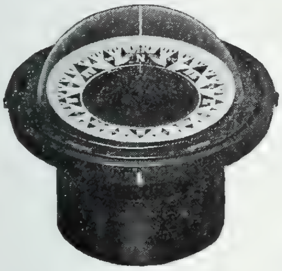

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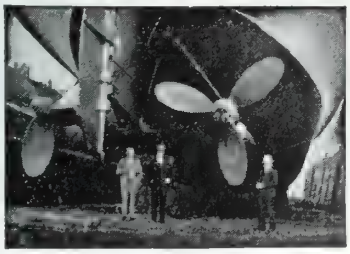

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ON THE WAYS

(Continued from page 88)

submarines provided by the bill was not revealed but Chairman Vinson of the House Naval Committee has said it would provide for "more than 100."

Columbia Gets 5 Barges—6 Tugs

It was announced in Portland on June 18 that the **Columbia Shipbuilding Company** had been awarded contracts for five seagoing barges for the Maritime Commission and six seagoing tugs for the Navy.

Work on the two contracts will be started at the company's Rainier, Oregon, yard and will be completed in its new yard at Columbia City, one mile from Rainier, which is expected to be in operation by fall with five ways. The Rainier yard is now working on boats for the Army Engineers.

The company's bid on the barges was $342,218 each, and about $600,000 each on the tugs.

Federal Launches

A new carrier for war cargo, the 6200-gross ton S. S. *Delaires,* was launched at the Federal Shipbuilding and Dry Dock Company, a U. S. Steel Corporation subsidiary, on June 16.

A sister ship of the *Delsantos,* launched April 4, both scheduled for operation in the "Delta Line," popular name for the Mississippi Shipping Co., Inc., she was sponsored by Mrs. Frederick Horner Bunting, Greensboro, N. C., daughter of George G. Westfield, vice president of the "Delta Line."

Navy Launchings In Northwest

On June 13, the **Seattle-Tacoma Shipbuilding Corp., Plant No. 2,** Seattle, Washington, launched its sixth destroyer, christened *Charles Baldwin.*

On June 15, the **Willamette Iron & Steel Co.** launched the cruiser-mine layer *Ozark,* under construction since July 12, 1941. Immediately following the launching, four keels were laid for four mine sweepers to be built on the same way occupied by the *Ozark.*

On June 20, the **Seattle-Tacoma Shipbuilding Corp., Plant No. 1,** Tacoma, Washington, launched the H. M. S. *Searcher,* an escort vessel for the British Navy. She was one of the yard's C-3 type cargo vessels converted into an escort vessel and is a sister ship of the U. S. S. *Barnes.*

Navy Launchings On East Coast

On June 7, the **Bath Iron Works Corp.,** Bathe, Maine, launched the destroyer *Taylor.*

On June 10, the **New York Shipbuilding Corporation,** Camdėn, New Jersey, launched the cruiser *Santa Fe,* whose keel was laid one year and three days previously. She was sponsored by fourteen-year-old Caroline Trevelyan Chavez.

New Lexington

Due to a request of 23,000 workers at Bethlehem Steel Co.'s Fore River Yard, the name *Lexington* will not disappear from the waters of the earth, but will once again be used on an aircraft carrier seeking vengeance for the *Lexington* lost in the Coral Sea.

The name appeared on the ways on June 17 in the same yard where the ill-fated *Lexington* was built just twenty years ago.

WANTED

Young Naval Architect, capable of designing and estimating. Excellent opportunity with permanently established shipbuilding firm. Please furnish references. Address: "SHIPBUILDING," Box 518, Pacific Marine Review, 500 Sansome Street, San Francisco, Calif.

Bechtel Makes Rapid Preparations

With piling for the administration building completed the first part of May, the yard of the Marin Shipbuilding Division of W. A. Bechtel Co. is now taking on a three-dimensional appearance and will be ready for the first keel laying in midsummer, according to W. E. Waste, general manager.

The problems of housing and training are now being solved. A survey and master plan is now being prepared for the new city which is to arise near the yard. In the interests of obtaining the 12,000 men the company will need by the end of the year, several vocational schools have been opened in the Redwood Empire and will run on a 24-hour basis, with six-hour classes.

Information regarding management of the new Marin Shipyard at Sausalito was announced by K. K. Bechtel, vice president, Marin Shipbuilding Division, W. A. Bechtel Co., in May.

When in full operation, the new yard will employ 12,000 workers, with an annual pay roll approximating $34,000,000. The yard, when completed, will represent a total cost of more than $10,000,000.

The managerial personnel includes: W. E. Waste, general manager; Robert Digges, administrative manager; E. C. Panton, manager of construction; M. O. Rosendahl, general superintendent; J. D. Brusstar, outfitting manager; E. B. Fox, personnel manager; Henry von Morpurgo, public and community relations, housing and transportation manager; Robert W. Adams, industrial relations manager; R. M. Dorman, director personnel recruiting and training; P. M. Grant, traffic manager; P. L. Shobe, chief accountant; H. H. Spomer, plant protection manager, and Walter Johnson, office manager.

Moore Yard Worker Chooses Sponsor

The *Bald Eagle* was launched at Moore Dry Dock Company on the evening of May 8, sponsored by Eva Vasconcellos, who was chosen by her father-in-law Manual Vasconcellos, who won the right in a drawing among the workers. Besides her father-in-law, Mrs. Vasconcellos has three other relatives working in the yard, John Vasconcellos, her husband, and her brother and father.

The Catalogs of Today Become the Technical Handbooks of Tomorrow

Oxygen Conservation. As part of its campaign against waste of oxygen in welding and cutting operations, Air Reduction is offering two posters for display in plants where oxyacetylene processes are used. Both posters dramatize oxygen's importance to war production and emphasize the need for its conservation. Eye-catching colors and illustrations give both pieces high attention value.

No advertising appears on either poster. Lightweight paper stock permits easy mounting anywhere in the shop. Write for free copies which will be sent postpaid in any quantity desired. Address G. Van Alstyne, Air Reduction Sales Co., 60 East 42nd Street, New York, N. Y.

Copper & Brass Research Association Bulletin. The June issue of this publication is devoted to the part the Maritime Commission is playing in the construction of our merchant marine, the Navy, and the conversion of peace-time plants to the manufacture of war armament.

When our country started its titanic national defense program, the Research Association, almost a year ago, changed the editorial content of its bulletin from that of the manifold uses of copper, brass and bronze by peacetime industries to those of the sinews of war. This magazine has a four-color cover and sixteen pages.

Readers of PACIFIC MARINE REVIEW can obtain copies of the June issue and can be added to the free mailing list for future issues by addressing the Copper & Brass Research Association, 420 Lexington Avenue, New York, N. Y.

First Aid to Industry, a 48-page illustrated book on conservation of rubber products in industry, published by United States Rubber Company.

All rubber products now in use by industry are essential to war production and will become increasingly difficult if not impossible to replace.

Complete and explicit suggestions are given for the proper care of these important rubber products from initial design through inventory and storage to use, maintenance, inspection and repair.

The book, "First Aid to Industry in Conserving Rubber," is completely indexed, and all mechanical rubber goods are included, such as, hose of all types; transmission, conveyor and elevator belts; mechanical packings; electrical tapes, wires and cables; molded and extruded rubber goods; rubber-lined equipment; rubber mountings; mats and matting; printing materials; and rubber-bonded grinding wheels.

Copies of the book are being mailed immediately to more than 50,000 engineers, plant managers, superintendents and others responsible for production and maintenance in American industries in all parts of the country, and other copies will be available on request.

Pedrick Size Book, a new 84-page size book has just been published by the Wilkening Manufacturing Co. of Philadelphia and Toronto.

In addition to listing piston ring specifications for automobile, truck and bus, tractor and marine engines, the new size book incorporates two outstanding features, a list of trucks and buses showing the engine make and model usually found in each, and specifications for older models usually omitted from such a book. Many of these models go back fifteen years or more. This will become more and more important as the present emergency causes these older vehicles to stay in service.

Leaflet E-1216, published by the De Laval Steam Turbine Co., describes the pumping equipment of the Indianapolis Water Company, which supplies the city of that name. There are five principal pumping stations, in which are installed a total of some 90 De Laval pumps, varying from small capacities up to 40 million gallons per day. A number of engineering problems have been solved by the use of various types of pumping equipment, including geared steam turbine centrifugal pumps, water turbine-driven centrifugal pumps, motor-driven centrifugal pumps and centrifugal pumps for raising water from wells. Copies will be sent upon request.

Electricians Rubber Gloves, a four-page catalog section on gloves, made by the Anode process from liquid latex, just published by The B. F. Goodrich Company, is now available upon request. This section describes the manufacturing process and its advantages, illustrates the types of gloves the company makes, and the rigid tests which have to be passed before the gloves are certified for use.

Everlasting Valves. Plant engineers and executives will be interested in an informative 32-page bulletin, which has just been published by Everlasting Valve Company, describing their quick-operating valves for blow-off, water columns and other boiler room services.

This bulletin is profusely illustrated with large, self-explanatory views which clearly show the design and construction of the various Everlasting Valve types. The concise text is topically arranged for quick reference, and explains in detail the exclusive features of the unique Everlasting designs.

Complete tables of specifications, dimensions and prices are also included to make the bulletin a comprehensive presentation of these valves. Copies of the bulletin can be obtained by addressing Everlasting Valve Company, Jersey City, New Jersey.

"Blackout Your Windows But Not Your Ventilation" is the title of a new bulletin (304) just issued by the Ilg Electric Ventilating Co., of Chicago, Illinois.

Pointing out that the need for ventilation grows acute in buildings with painted, closed, or otherwise "blacked-out" windows, the bulletin features a typical solution which has been engineered on the West Coast.

Using standard Ilg power roof ventilators (self-cooled motors inside of weather-tight penthouses), special "blackout hoods" were fabricated by the contractor on location, working from plans supplied by the Ilg branch office in Los Angeles. Then, to replace windows as sources of fresh air, special hooded fresh air inlet louvers were designed and built by the contractor.

Variable Voltage Planer Drive: For increasing planer production in industrial plants, variable voltage planer drives with a 30-to-1 speed range are described in a new four-page folder (B-3064) announced by Westinghouse Electric and Manufacturing Company.

Faster planer acceleration and retardation are discussed with a note on accuracy of reversals. Speed range, safety, and other features are covered. A detailed description of the motor generator set and the planer drive motor covers operation and maintenance factors.

Installation photographs show the drive applied to planers doing important wartime jobs. A schematic diagram explains how the Rototrol, a regulating generator, controls the variable voltage drive. Elimination of delay due to sequence closing of large accelerating contactors is shown by comparing the rpm-time characteristic curves of constant and variable voltage drives.

Keep Your Welders Welding

(Continued from page 69)

mutator; any distance greater than ⅛ inch may cause brushes to wedge, resulting in chattering and excessive sparking.

Use the correct grade of brush for each specific application as recommended by the manufacturer of the welder. It is false economy to use brushes down to the absolute minimum length. Replacement should be made whenever an inspection indicates that they are approaching minimum.

Make sure that the contact surface of each brush has the polished finish that indicates good contact, and that the polish covers all of the surface of the brush. Replacing each brush in the same brush holder and its original position.

New brushes should be fitted carefully to the commutator. Sand only until the curve of the brushes is the same as that of the commutator. Be sure that the brush shunts (pigtails) are fastened securely so that current will not overheat the brushes and brush holders.

Check the springs that hold the brushes against the commutator. Improper spring pressure may lead to commutator wear and excessive sparking. Excessive heating may have annealed the springs, in which case they should be replaced and the cause of heating corrected.

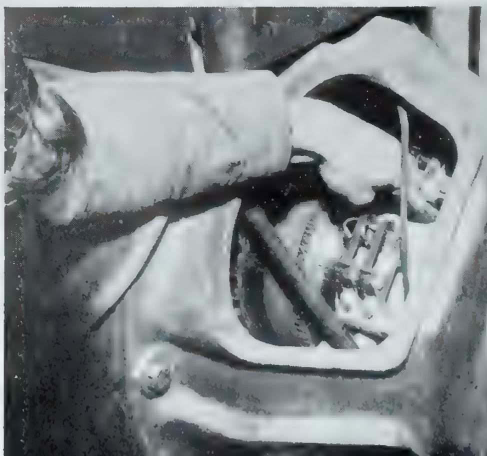
Commutators

Inspect the commutator for color and condition. It should be clean, smooth, and glossy, with a color varying from straw to chocolate brown where the brushes ride on it. A bluish or reddish color indicates overheating of the commutator. Roughness of the commutator should be removed by sandpapering or stoning. Never use emery cloth or an emery stone. Use a "fine" stone or Number 00 sandpaper unless the commutator is in bad condition, when the job may be started with a "coarse" stone and finished with "fine."

For this operation, press the stone or sandpaper against the commutator with moderate pressure with the motor running, and move it back and forth across the commutator surface. Use care not to come in contact with live parts. Be sure to keep the dust out of the machine.

If the commutator is very rough as evidenced by pronounced up and down vibration of the brushes, the armature should be taken out and the commutator turned down in a lathe. When this is done, it is usually necessary also to cut back the insulation between the commutator bars slightly. If the commutator is found to be dirty when the generator is inspected, it should be wiped clean with a piece of canvas or other cloth that is free from lint.

Never put oil on the commutator. Proper selection of brushes gives the commutator all the lubrication required to prevent excessive wear and to build up a good smooth operating glazed surface on the copper. The addition of oil results in the development of a high resistance film which may cause undue heating and rough brush action. The oil will also have a detrimental effect on the internal parts of the commutator.



SMOOTHING commutator with sand paper.

SHIPS FOR VICTORY

Pacific MARINE REVIEW

August, 1942

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Pacific MARINE REVIEW

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Our Cover

The illustration on our cover this month shows Mrs. Carl W. Flesher making the "Scud Fly" as she christens the C-2 steamer *Flying Scud* building at the East Yard of the Moore Dry Dock Company, Oakland, California, for the U. S. Maritime Commission.

Mrs. Flesher is the charming wife of the popular Pacific Coast Regional Director for Ship Construction, U. S. Maritime Commission.

Flying Scud, like most of the standard C-2 type cargo vessels of the Commission, is named in honor of a famous clipper ship.

Official Organ

Pacific American Steamship Association

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Shipowners Association of the Pacific Coast

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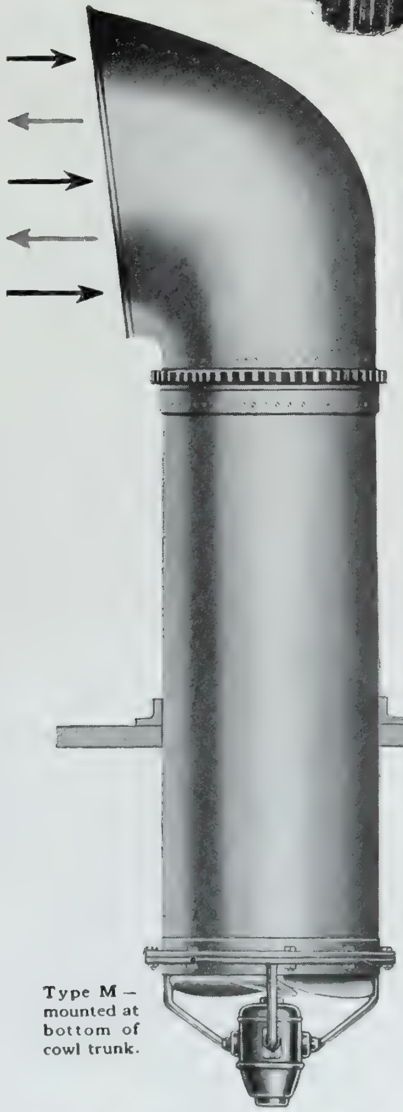

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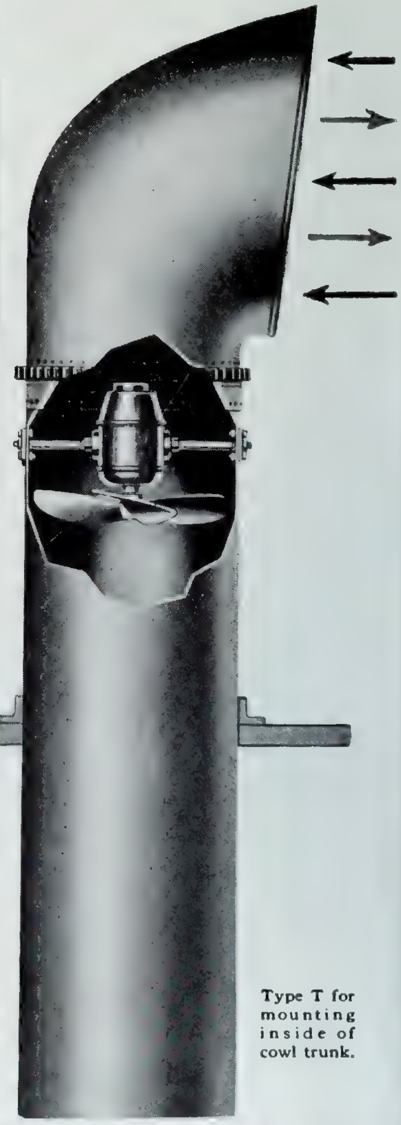

Type T for mounting inside of cowl trunk.

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Pacific MARINE REVIEW

Editorial Comment

Transport of Cargo By Air

AS WE "GO TO BED" with this issue, the press is blaring in large headlines the announcement that Henry J. Kaiser is to be given an order for the construction of 120 flying boats of the Martin "Mars" type, to be especially designed for the carrying of troops and munitions to the various battlefronts.

There is no doubt that the Kaiser organization can build such flying boats, or that properly trained pilots can fly such boats across the Atlantic or the Pacific.

Nor do we question the expediency of the order. Everything that gives any promise of helping the war transportation problem should be given a trial.

However, there are some fundamental considerations which we wish to emphasize lest our friends the shipbuilders and the ship operators should lose hope in the future of their industry.

The flying boat "Mars" is a 70-ton airplane —that is to say her total weight (hull, engine, fuel and cargo) when taking off must not be over 70 tons.

She is powered with four 2000-hp engines, and it takes all of that power to get her 70 tons off the water and to flying elevation.

On the authority of Mr. Martin, as quoted in the press, she can fly "7000 miles at a cruising speed of 200 mph if given a gasoline tank capacity of 10,000 gallons."

In flying from America to Europe and return, she would need to be fueled for approximately 7000 miles to compensate for adverse metereological conditions.

Ten thousand gallons of aviation gasoline weigh 30 to 32 tons, so she needs about 30 tons of fuel to make the round trip with 14 tons of cargo.

One hundred and twenty flying boats on a round trip would transport approximately 1680 tons of cargo and burn up approximately 3700 tons of aviation gasoline. Each round trip could be accomplished in approximately 30 hours flying time, and at each end of the route, at least 15 hours average loading, fueling and servicing time should be allowed, a total of 60 hours for the round trip, or 12 round trips a month.

A Liberty 10,000-ton deadweight cargo carrier could under favorable circumstances make the round trip voyage to British ports in 24 days steaming time, and say five days lay-over at each end, or 34 days total.

On the basis of these figures, three Liberty steamers would more than equal the carrying capacity of 120 "Mars" type flying boats.

The Dreams of Yesteryear

OCCASIONALLY, IT IS GOOD to indulge in a little historical browsing in order to get better perspective on present problems and get rid of that "First Time in History" complex which is so apt to warp human judgment. The bound volumes of PACIFIC MARINE REVIEW, published continuously on the Pacific Coast for the past 38 years, furnish a fertile field for such browsing, and here are two discoveries from the 1917-1918 period. We reproduce these items without alteration except for the emphasis. They have a direct bearing on some of our present problems.

PACIFIC COAST STEEL PLANT

At an initial cost of $9,000,000, a giant steel and pig iron plant is to be erected on Puget Sound, work on which is to commence within the next sixty days.

This project, primarily conceived by B. S. Thane of the Alaska - Bastinau mines, and financed by several San Francisco bankers and capitalists, is one of the largest enterprises ever planned in the West, and the effect of its consummation will be far reaching.

It is proposed to make an initial expenditure of $9,000,000 to obtain a site, erect buildings and purchase machinery and equipment to at once place the plant in operation and then to increase the plant until the complete project will represent a total outlay of approximately $25,000,000.

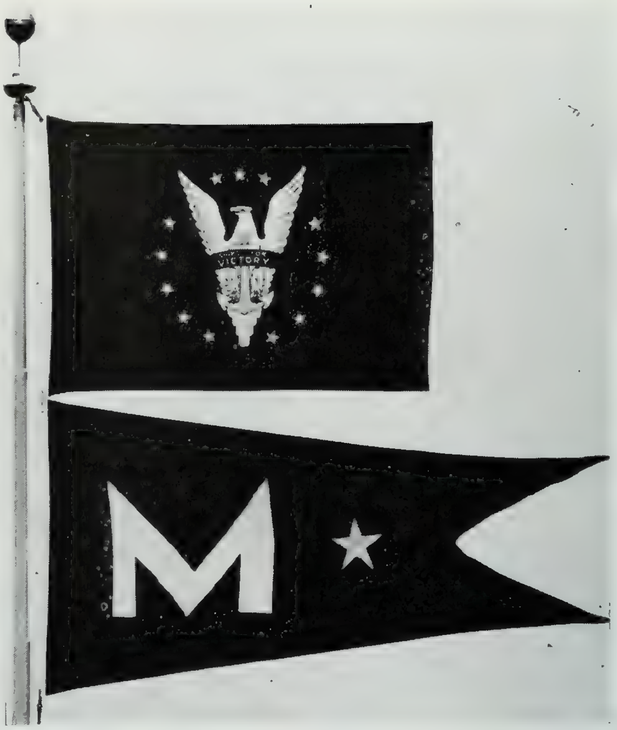
The establishment of this great plant will not only mean that the *steel shipbuilding industry on the Pacific Coast will be placed on a permanent basis,* but that hundreds of the variegated manufacturing industries of the nation will erect plants in the West, and that Seattle, instead of being the distributing point for the great quantity of tin plate used in the canning industries of the Pacific Coast, Alaska, Australia, Siberia and the Orient, will be the point of manufacture of this very necessary commodity.

NEW TYPE OF STEEL SHIP

Announcement is made of the signing of a contract by the Emergency Fleet Corporation of the United States Shipping Board with the Southern Shipbuilding Corporation, whereby the Southern Shipbuilding Corporation will immediately begin the construction of *fabricated steel ships of an altogether new type* at Charleston, South Carolina. The amount involved in the initial contract is $20,000,000. The Southern Shipbuilding Corporation, which is financed principally by Eastern capitalists, will begin to construct its shipyard at Charleston without delay.

The new company will build steel freighters of 7500 tons each. They will be of a fabricated type designed by H. Newton Whittelsey, of New York, who is the president of the company. Material will be fabricated for the present in the Birmingham district and brought to Charleston by rail. *The 7500-ton ship which Mr. Whittelsey has designed and patented is said to be of such a character that it can be built more quickly and more cheaply than any other steel ship of the same size; so cheaply, in fact, that the Whittelseys are confident that after the war, if American orders are not enough to keep their plant busy, they can go into the foreign market and compete for orders against cheap labor. One feature of the new ship is that principally semi-skilled labor will be required to construct it, and accordingly one of the most difficult current problems of shipbuilding will not hamper the Southern Shipbuilding Corporation.* After very careful consideration, Admiral Washington Capps and other members of the Emergency Fleet Corporation have approved the Whittelsey plans and the Shipping Board has now given contract for the immediate construction of sixteen vessels.

It is understood that the company will employ between 3000 and 4000 and that later the number employed will be increased to 7000.



The Maritime "M" Merit Roll

THIS FLAG AND PENNANT are proudly flown in shipyards and plants where outstanding work has been done in building Liberty type ships for America's merchant marine Victory Fleet. All cooperating yards and plants may fly the Victory Fleet flag (at top of staff), but only those meeting rigid requirements of the U. S. Maritime Commission as to production, labor relations and all around initiative are awarded the "M" pennant (shown below flag).

The pennant is awarded for a six months' period, during which period the recipient must qualify to retain it. If lost for a period, a yard may regain it for another period. With the second and subsequent awards go additional gold stars.

Seven shipyards and plants have been awarded the "M" pennant and corresponding Merit Insignia badges for employees. They are: Oregon Shipbuilding Corporation, Portland, Oregon; California Shipbuilding Corporation, Wilmington, Calif.; Permanente Metals Corporation (Richmond Shipyard No. 1), Richmond, Calif.; Bethlehem-Fairfield Shipyard, Inc., Fairfield, Baltimore, Md.; General Machinery Corporation, Hamilton, Ohio; Joshua Hendy Iron Works, Sunnyvale, Calif.; Webster-Brinkley Steering Company, Seattle, Wash. The Oregon Shipbuilding Corporation has also received its additional gold star for a second period of meritorious performance.

It should be noted that only the new shipyards building Liberty type ships exclusively, and manufacturing firms building machinery for this type of ship, are eligible for this contest and its awards.

Victory Symbol and Performance

EVERY OFFICER AND CREW member of every Navy and merchant ship entering or leaving the port of New York, as well as civilians in the vicinity of Battery Park, recently saw the new Todd "Victory" symbol, code flags in a 33-foot string, on the Battery Place facade of the United States Lines' building at One Broadway.

The flags were strung by the Todd Shipyards Corporation which has its principal offices in the building. At the bottom of the string is a small white pennant bearing the name "Todd," symbolizing a pledge that the organization will bend every energy to the successful prosecution of the war.

John D. Reilly, president of the corporation, has arranged that in each of the eleven Todd shipyards a similar string of flags be raised each day, with the idea that this symbol will serve as a reminder to all workers and men at sea of what all America is working day and night to achieve—VICTORY! The flags will continue to fly until the conflict is brought to a successful termination.

During the year ending June 27 last, the company's yards on the East, West and Gulf coasts turned out 4,491 ships, either repaired, converted or constructed, equaling 15,000,000 tons. Employment in these yards is over 100,000 persons, an unusually large proportion being skilled craftsmen.

The flags and the letters for which they stand are, from top to bottom:

V—White background with red bars diagonally from each of the four corners;

I—Yellow background with blue orb in the center;

C—Blue transverse bars top and bottom, separated from a central red stripe by white bars;

T—Three upright bars of red, white and blue, in that order;

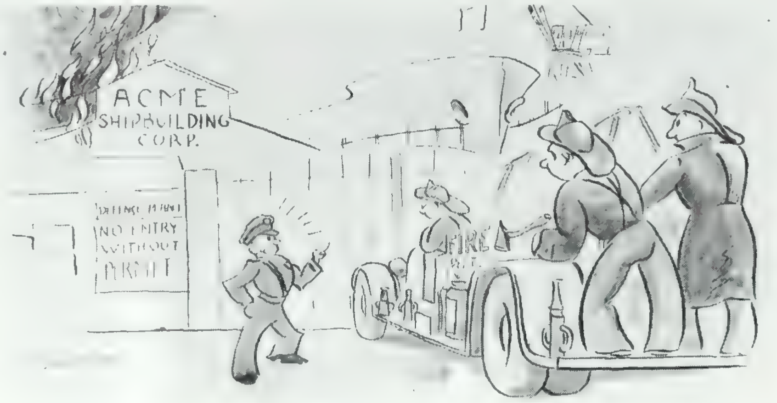
O—Upper diagonal of red and lower diagonal of yellow;

R—Red background with right-angle crossed yellow stripes;

Y—Alternate yellow and red diagonal stripes.

Cartoon of the Month . . .

MANY ORIGINAL CARTOONS are appearing in the house organs of shipyards these days. This one, captioned "I have my orders—Birth certificates, please," is by Jack P. Garside and appeared in the July issue of the Shipbuilder, organ of the Los Angeles Shipbuilding and Dry Dock Corporation.



Available

Ships

One Reason Why Hawaii Came Back—

On the Alert at the Piers . . .

U. S. NAVY guards give the ships excellent shore protection.

THOSE BOMBS which started falling on Pearl Harbor when Hawaii was having its toast and pineapple juice, on a quiet Sunday morning last December, would have knocked out any ordinary community. But Hawaii was not an ordinary community. Treacherous as that blow was, below the belt as it was, it only knocked Hawaii to its knees, and not for long. Hawaii's amazing comeback, and the speed of it, are something to wonder at, as well as comforting to contemplate. Our Pacific border is safe, so far as Hawaii is concerned, thanks to Hawaii's comeback.

Of course, there's a baker's dozen reasons why; in a few weeks, a stricken community was a stronger community than ever before. The spirit of the Hawaiian people is one. The unbeatable blood of American pioneers courses in their veins. The valor of our fighting forces, caught off guard, but rallying with a heroism that started in "remembering Pearl Harbor," even while the bombs were still falling, is another reason. A united nation, ready to pour in reinforcements, guns, planes and ammunition, is another reason. And there are many more reasons. But one reason is spelled with five letters . . . SHIPS.

On the Alert at Sea . . .

AMERICAN SHIPS are protected by ready-to-fight sailors who man powerful guns.

The Ships—On Hand

Now, war is realistic. So, let's be realistic about anything pertaining to it. With all Hawaii's magnificent spirit, the valor of our boys in uniform, the legions of reinforcements and mountains of material waiting, Hawaii's comeback could not have been staged with the speed and completeness that has made mighty comforting history for all of us, if it hadn't been for SHIPS.

Nor do we mean ships, *on order*. We mean ships, *on hand*. We mean ships, with their keels in the water, and steam up. We mean ships, too, in the right water, the Pacific, near the spot where this trouble started brewing. And Hawaii had ships, on hand, on time, and where "X marked the spot."

Obviously, such a fortunate circumstance couldn't just happen overnight. And it didn't. Hawaii happened to have the ships, on the morning of December 7, because of a lot of things which had been happening for a good many decades.

A Little Bark

It all goes back to a little green stalk, reaching towards the sun on some Hawaiian hillside, and to a little 300-ton bark, pitching across the last league of her three-week crossing from San Francisco to Hawaii. The little stalk was sugar, in which American pioneers of the land foresaw an American industry destined to supply our country with one-sixth of its demand for sugar. The little three-hundred-tonner was the *Emma Claudina*, from the poop deck of which Captain William Matson, a pioneer of the sea, foresaw another American industry, des-

tined to build a bridge of ships from the Pacific Coast, not only to Hawaii, but to the Antipodes!

At that time, Hawaii was an independent monarchy, without any substantial industry. At that time, the great Matson fleet existed only in one man's mind. But sugar grew, and Captain Matson's little bark grew. Hawaii became a republic, a territory of the United States, with an industry supporting a quarter-billion-dollar commerce between the islands and the mainland. The little bark became a great fleet of nearly fifty ships, necessary to carry that quarter-billion-dollar commerce of this island territory. One could never have been without the other.

This is just the briefest summary of one of the most striking examples of cause and effect in American free enterprise in the whole gigantic structure that is our present national stability. Even a hasty glance at the brilliant product of this dual alliance of free enterprise in the Pacific makes crystal clear the wisdom of our American way, which encourages men with dreams to make their dreams come true. It is the just kind of compensation, offered by our American way, which has created the American pioneer and the great country of his building.

A Luxurious Liner

It was no accident that the Matson passenger liner, S. S. *Lurline*, was, at that moment, just a few hours out of Honolulu. She was on her accustomed way, the way of Matson ships since 1882 when Captain Matson opened that way in the little *Emma Claudina*. And now one end of that way converged at the storm-center of war.

Over the air came the news. Immediately, her radios were silenced, and her course sharply changed. Portholes were painted black. Tarpaulin curtains were draped over the rail, to screen off the light that might attract the enemy. And now began a race of skilled navigation against the lurking enemy. The port was San Francisco. The stake was precious lives. For days, no one knew where the *Lurline* was. Then, one day, she sailed through the Golden Gate! The race was won. The lives were safe. Another chapter of skill and heroism in the record of American seamanship.

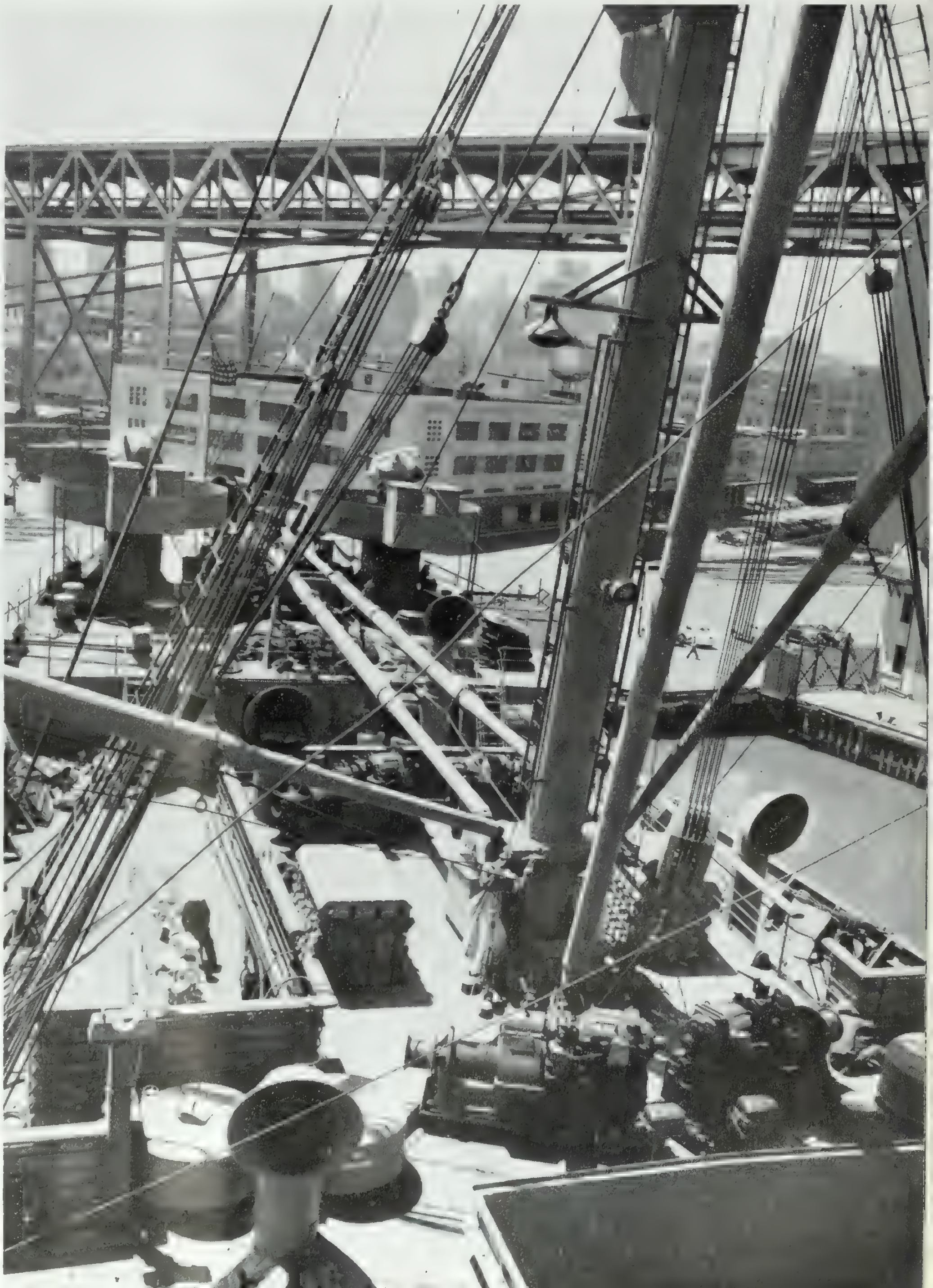
When the *Lurline* docked, already the nation's cry was for ships. Every square foot of deck space for reinforcements, every cubic foot of cargo room for guns, ammunition, food, and supplies was needed for Hawaii. It was no accident that the *Lurline*, already at her pier, lowered her gangplank for marching men, and opened her holds for cargo. Because of a plan in a man's mind, years ago, she was *on hand* when and where needed.

A Great Fleet

It was no accident that nearly fifty other Matson ships were already speeding to their new war job. Three other great passenger liners, the *Mariposa*, *Monterey*, and *Matsonia*, quickly covered their white with war gray. A mighty fleet of freighters put on the same uniform. Here were ships which, even at our present accelerated rate of building, would have taken conservatively 3750 work days to build. *These ships were on hand!*

The legions of reinforcements began streaming across the two thousand

●



Quick Turn-Arounds . . .

DAY AND NIGHT the powerful electric winches swing the cargo into the holds

THE SHIP STRAINS at her hauser (facing page), anxious to be off on another Victory voyage.

miles of ocean to Hawaii. The mountains of freight waiting at Pacific ports began moving to the islands. And, as shipload after shipload pulled up to the docks at Honolulu, the spirit of Island America soared to a new high. Here was no Singapore, leading a detached military existence, fighting on with dwindling supplies of men and material. Here was an American community, resilient, stronger each succeeding day, as the ships kept coming in. Here was, really, Gibraltar. *And the reason Hawaii proved to be Gibraltar, not Singapore, was ships!*

The stability of the building erected by American free enterprise has stood the test. It was able to receive the treacherous first blow, and so ward off that blow from mainland cities. This fact alone would justify the vision, sweat, and labor put into building. But this fact is not alone. It is followed by a bigger fact. *Today, there are more planes, more guns, more ammunition, more food, and more fighting men in our westernmost stronghold.* And, because of this fact, the whole nation is more *braced* for any future attempt of the enemy to break through. Hawaii is familiar with treachery now, and on the alert. And, in the knowledge of this fact, men, women, and children in mainland cities may, with less apprehension, put out their lights and go to sleep.

Things To Remember

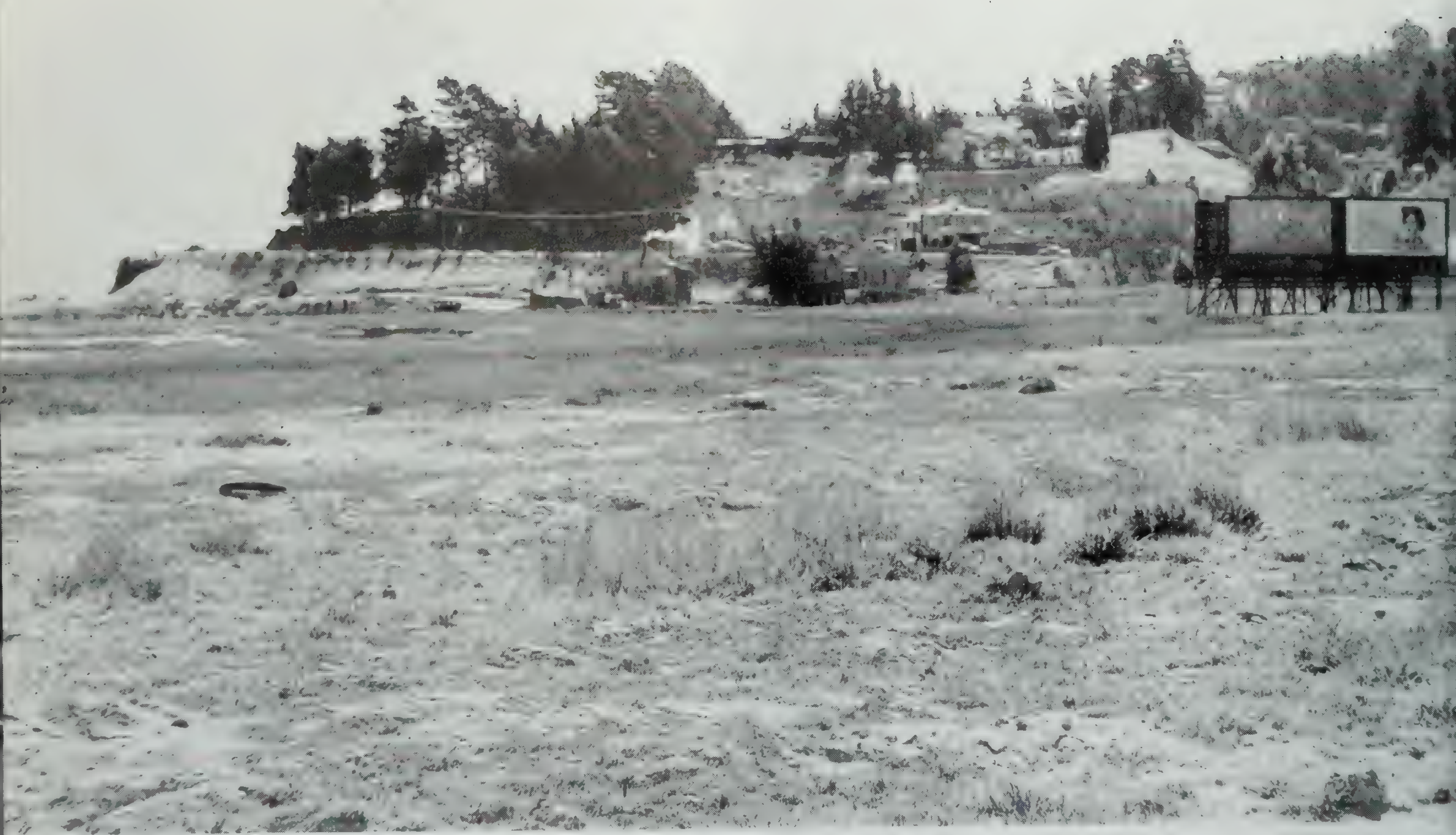
All of these things are so, *because Hawaii came back*. But, when we "*Remember Pearl Harbor*," it is well to remember, also, *why Hawaii came back*. It will be well to remember this until victory, and forever afterwards. Any confusion of post-war reconstruction must be ordered confusion, in no way diverting us from established principles, tried, tested, and proved worthy. American free enterprise built Hawaii, and built Hawaii's ships. What proved stable and resilient in the past will prove the same in the future. We must remember all these things.

But if, in our remembering, we find ships playing a predominant part, let that remind us that our American merchant marine has always rallied gallantly to our country's needs in times of danger. Its record makes glorious pages in American history. But no mere printed pages, or listing of events, could ever "cover" the whole story of our merchant marine. That has been the function of tradition, high-lighted by words of plain sailing men who were there, and whose vivid, first-hand accounts have been passed down to us by word of mouth.

Knowing both the history, and the tradition, of the American merchant marine, it is not surprising that our most recent emergency should have been met with our most recent example of our marine's traditional readiness. Both history and tradition will receive rich additions from this latest performance, of which the case of Hawaii and Matson ships is a memorable example. Put that down as something Americans will always remember. Knowing one of the chief reasons why Hawaii was, on December 7, and *why Hawaii came back* afterwards, they will not be likely to forget the importance of SHIPS.

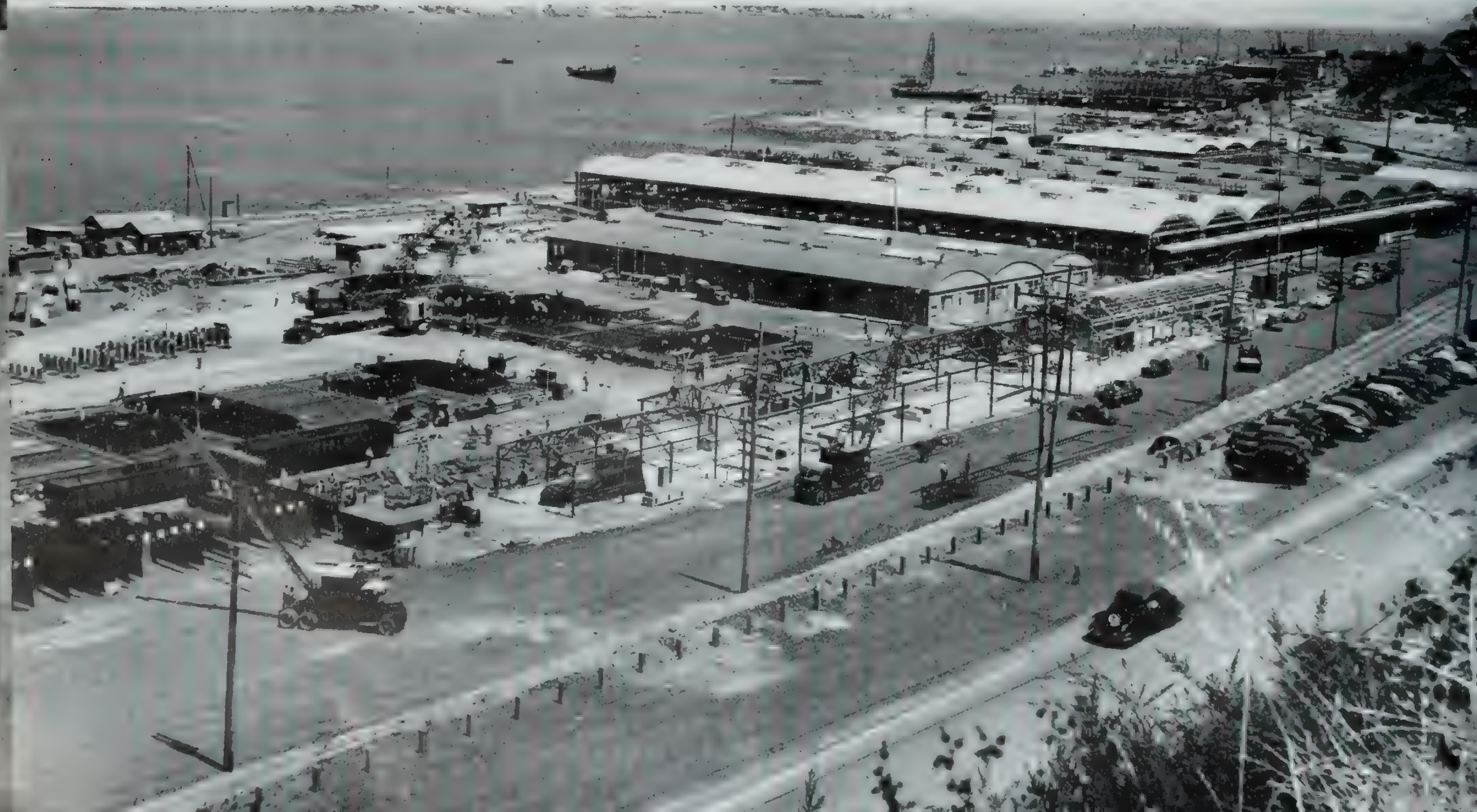
Vigilance . . .

EVERY SWING LOAD of cargo, every person entering the ship is under the watchful scrutiny of trained U. S. Navy guards.



Pine Point and Mud Flats in March 1942 . . . . .

Pine Point . . . a Working Shipyard in July 1942



Marinship

W. A. BECHTEL CO. BUILDS LARGE SHIPYARD IN RECORD TIME AT SAUSALITO

ADMINISTRATORS AT MARINSHIP
W. E. Waste, general manager; K. K. Bechtel, vice president in charge; P. H. Eichler, Jr., resident engineer, U. S. M. C.

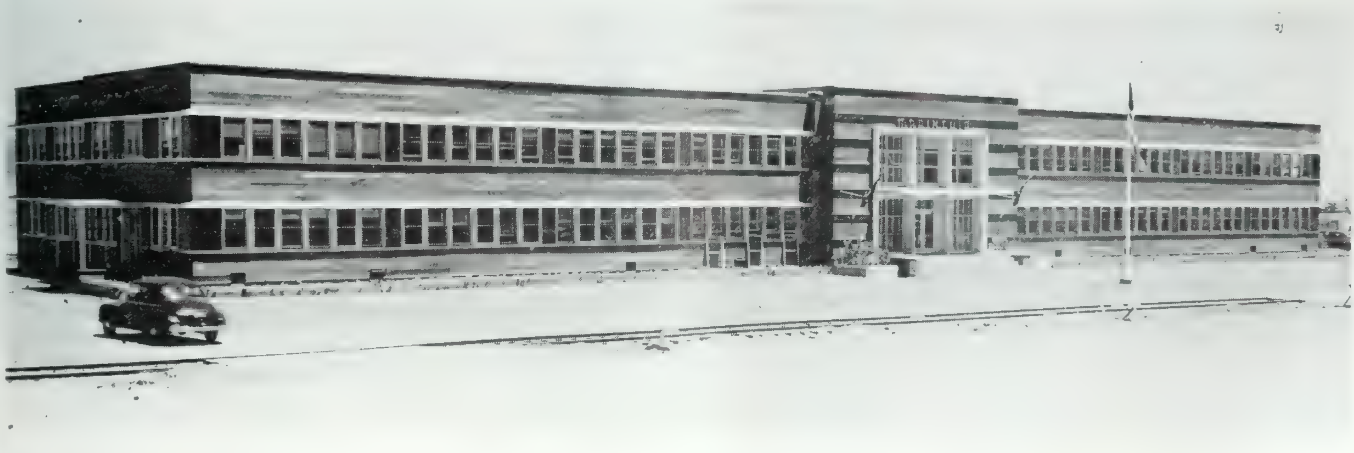
SAUSALITO, A DREAMY, little old-world type of city by the Golden Gate, has literally been turned upside down in recent months and is now the scene of feverish shipbuilding activity. True, Sausalito has been building boats for years—trim cabin cruisers and sleek sailboats. But that was before Pearl Harbor.

The impact of the war has suddenly been brought home to Sausalito and Marin County with the establishment of a six-way shipyard costing more than $12,000,000.

Early in March of this year, the United States Maritime Commission decided it needed another shipyard for the construction of emergency cargo vessels in the Bay region and asked the W. A. Bechtel Co., one of the West's great construction engineering firms, to build and operate it. Bechtel engineers surveyed the San Francisco Bay area and selected Sausalito as the ideal site for the new shipyard. On March 12, the W. A. Bechtel Co., was awarded the contract to construct and operate the new plant.

Construction work began on March 28 and building has gone steadily on since that time on a 24-hour-day basis. Despite a period when heavy spring

ADMINISTRATION BUILDING
started, May 4, 1942 . . . occupied, June 16, 1942.



Thousands of Piles Form Foundation for Ways

PINE POINT HILL was leveled down and used to fill in the adjacent mud flats. Thousands of piles were driven in to form a foundation for the ways.

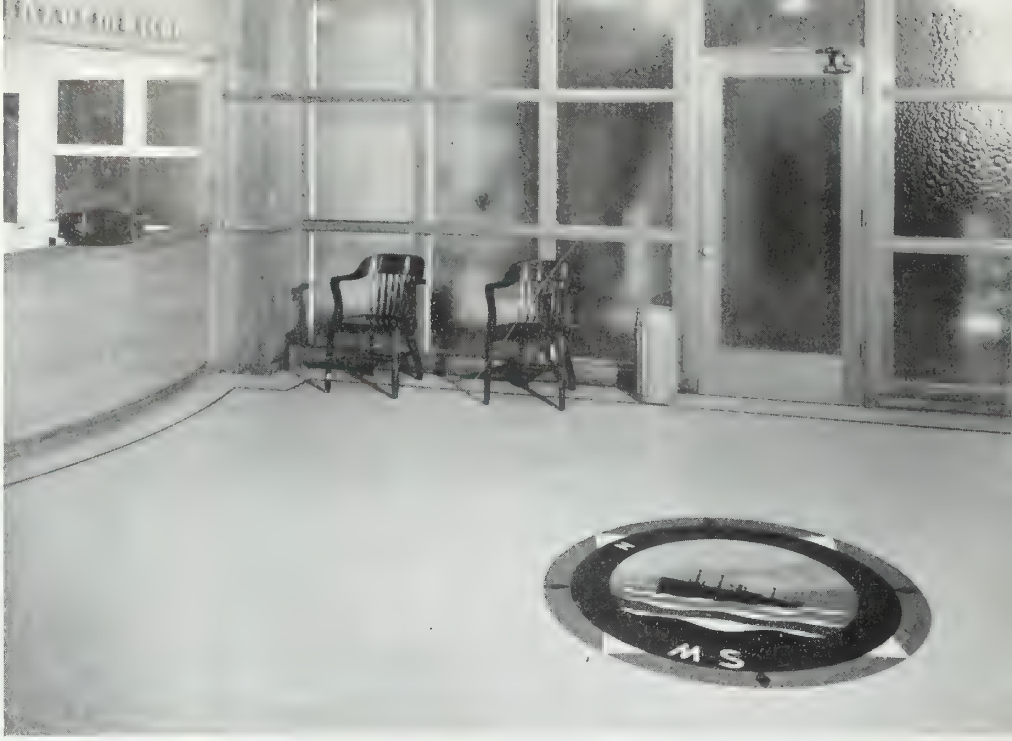
STREAMLINED PILE DRIVER, as compared with the old type on the right, was responsible for the great speed by which wooden piles were pushed into the rock fill.

FACING PAGE: RIGHT ON THEIR HEELS . . . as soon as piles were driven, a crew began to put on the wooden surface and was immediately followed by a crew to construct the ways.

rains prevented work by earth-moving equipment, construction schedules have been maintained and exceeded.

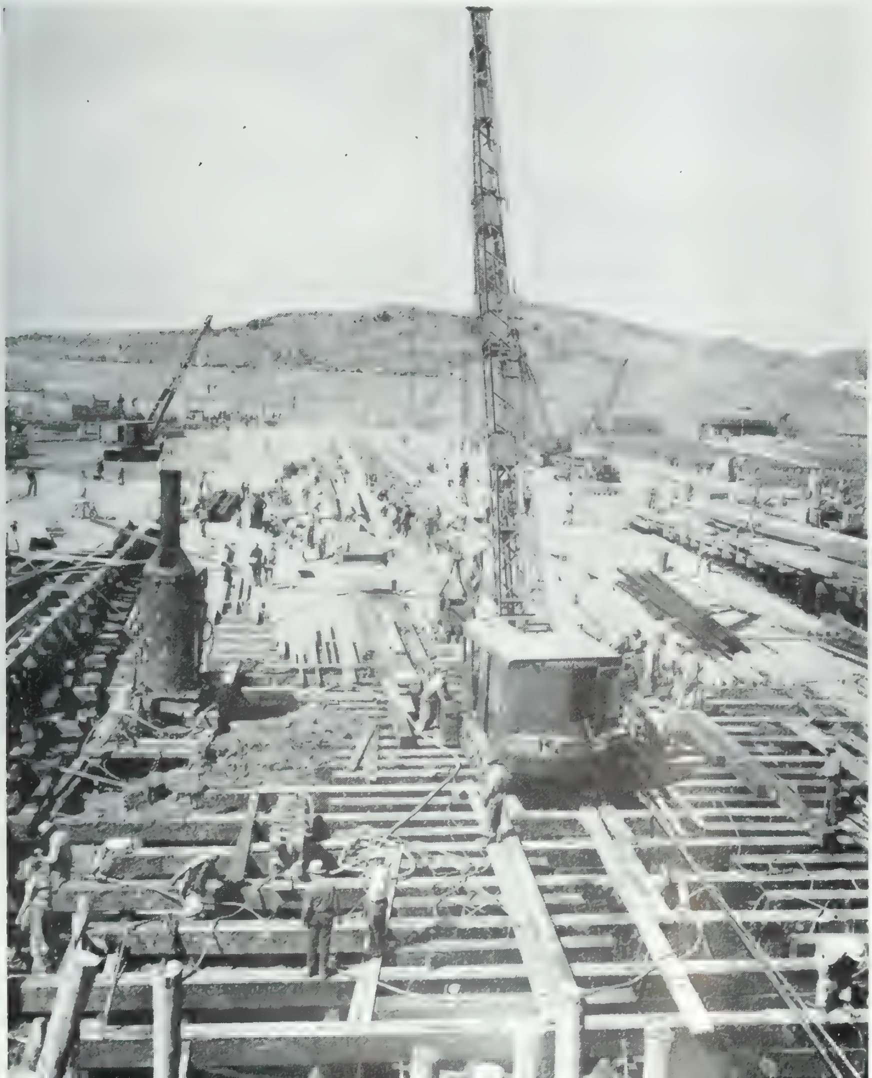
The Maritime Commission acquired a strip of land nearly a mile long beside the waters of Richardson Bay. The early construction days required the removal of 32 private homes from Pine Point, a wooded knoll at the edge of town. The entire hill itself was then obliterated from the landscape, as was nearby South Hill. Nearly one million cubic yards of earth and rock were removed and used to fill in the mud flat along the bay.

The residents of Sausalito can hardly believe their eyes when they see the changed landscape and the tremendous activity. Seemingly overnight, thousands of piles have been driven to bedrock, huge buildings have been thrown up and thousands of men and women swarm over the shipyard. One of the buildings, the main warehouse, has 133,000 square feet of floor space and is the largest structure in Marin County. The administration building, at the northern end of the yard, was occupied just 42 days after the first piles were driven for its foundation.



RECEPTION HALL in the Administration Building. Twenty-seven hundred yards of Armstrong Cork Company linoleum of the type shown above was used throughout the building.

From President Roosevelt down, the cry is for speed and more speed in war production. The "Marinship" plant, judging from records attained thus far, is determined to have speed for its motto.



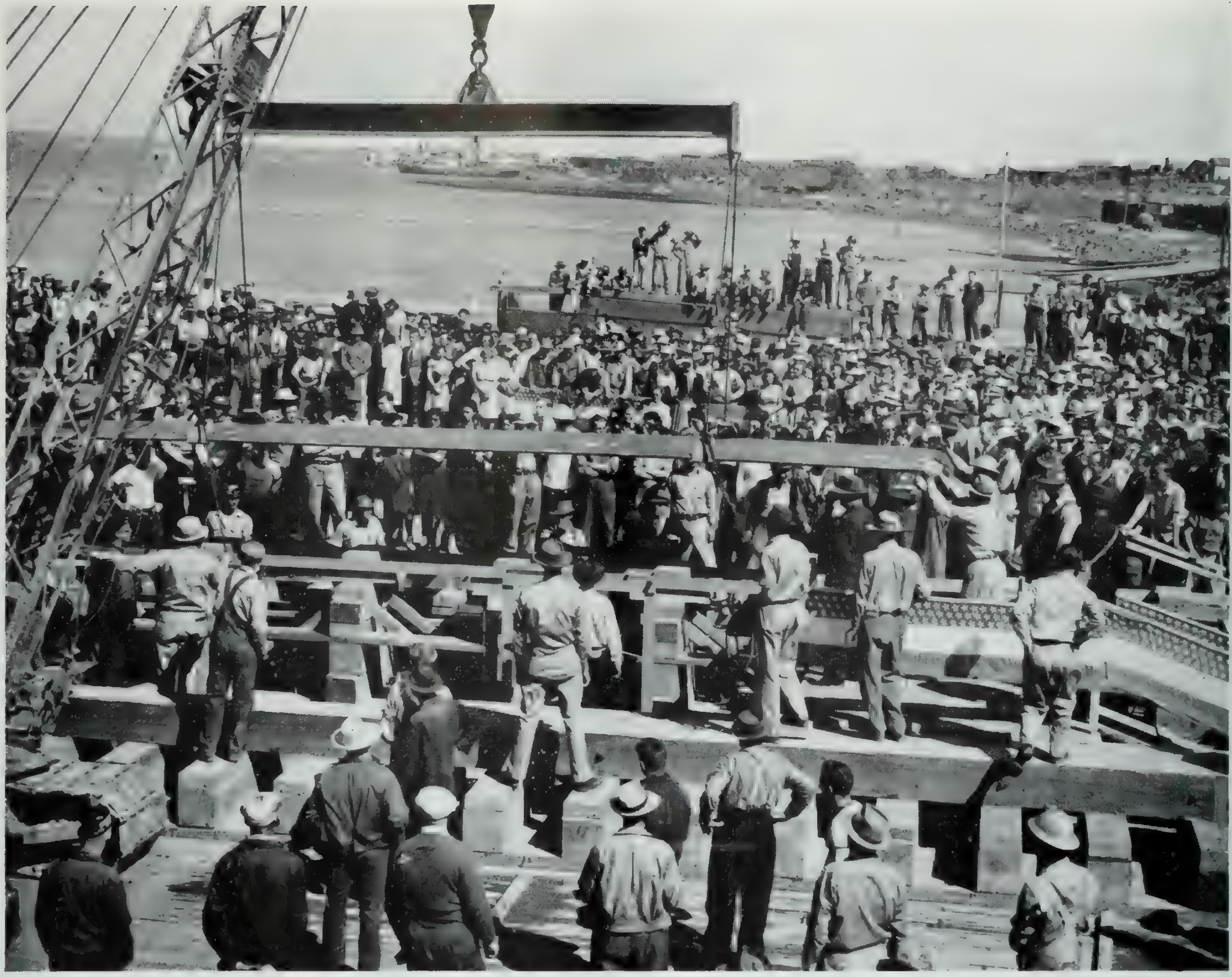
The new Sausalito shipyard is "the last word" in modern facilities for building ships for Uncle Sam. Profiting from experiences of other shipyards, Bechtel engineers have achieved a streamlined plant which, according to S. D. Bechtel, president of the W. A. Bechtel Co., is destined to hang up some enviable records. The first keel, for example, was laid on June 27, a week ahead of schedule.

Taking a leaf from the automotive industry, "Marinship" is laid out for assembly-line production. The steel arrives at the north end of the yard and is racked in the storage yard. On the top floor of the three-story mold loft building, patterns are laid out and the steel plates are then cut to form in the adjoining plate and structural shop.

Cranes, which loom up all over the vast yard, take the plates into the subassembly building where ship sections are welded together.

Incidentally, more work is done under roof than in any other coast shipyard, experience having taught that the elements play tricks with steel.

Huge whirly cranes pick up preassembled parts of the Liberty ships and lower them into place on the shipways. Fifty and sixty tons of steel are tossed around "with the greatest of ease." Prefabrication is the key to fast construction.



THE FIRST KEEL was laid on the new way on June 27, about three months after the yard construction was started.

A Ship is Started

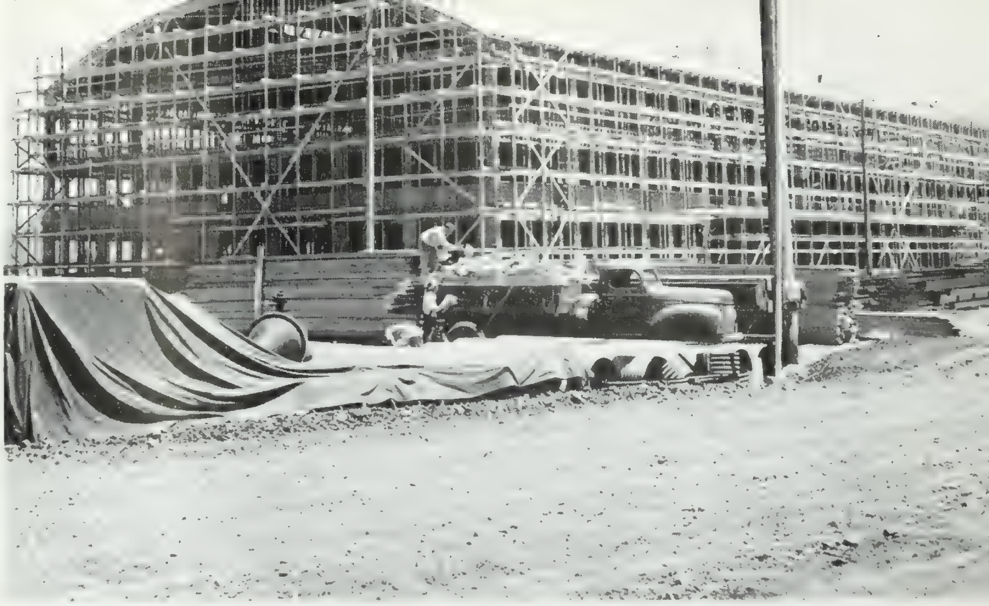
KEEL BLOCKS are shown here being laid for the first ship.

FACING PAGE: ASSEMBLING first keel and bottom plates on the first Liberty.

The outfitting docks make it possible to work on six ships at a time and, with ships under construction on the ways, actual work can be done on twelve ships simultaneously. W. E. Waste, general manager for "Marinship," who came to Sausalito from the post of administrative manager at "Calship," the Terminal Island, Los Angeles Harbor plant which is operated by the group of which W. A. Bechtel Co. is sponsor, believes "Marinship" is about the ideal size for a shipyard.

Due to the fact that previously established shipbuilding plants in the San Francisco Bay area acquired the services of most of the experienced shipyard workers, "Marinship" has been forced to undertake the training of men and women for employment in the yard. An old ferry garage in Sausalito as well as an abandoned schoolhouse at Waldo, have been transformed into schools which operate around the clock, training men from every walk of life for well-paying jobs.

R. M. Dorman, superintendent of training, has had to create his own labor supply. White-collar workers from almost every conceivable form of occupation, are receiving intensified training to fit them to perform the various tasks involved in building ships.



THE MOLD LOFT housed in this three-story building, which also contains drafting rooms and storage space.

Expert instructors have already succeeded in making welders, chippers, marine draftsmen, shipfitters, and riggers out of artists, automobile salesmen, lithographers, optometrists, nurserymen, real estate salesmen, hairdressers, and attorneys. Probably never before have so many men from so many different lines of work been employed in a shipyard.

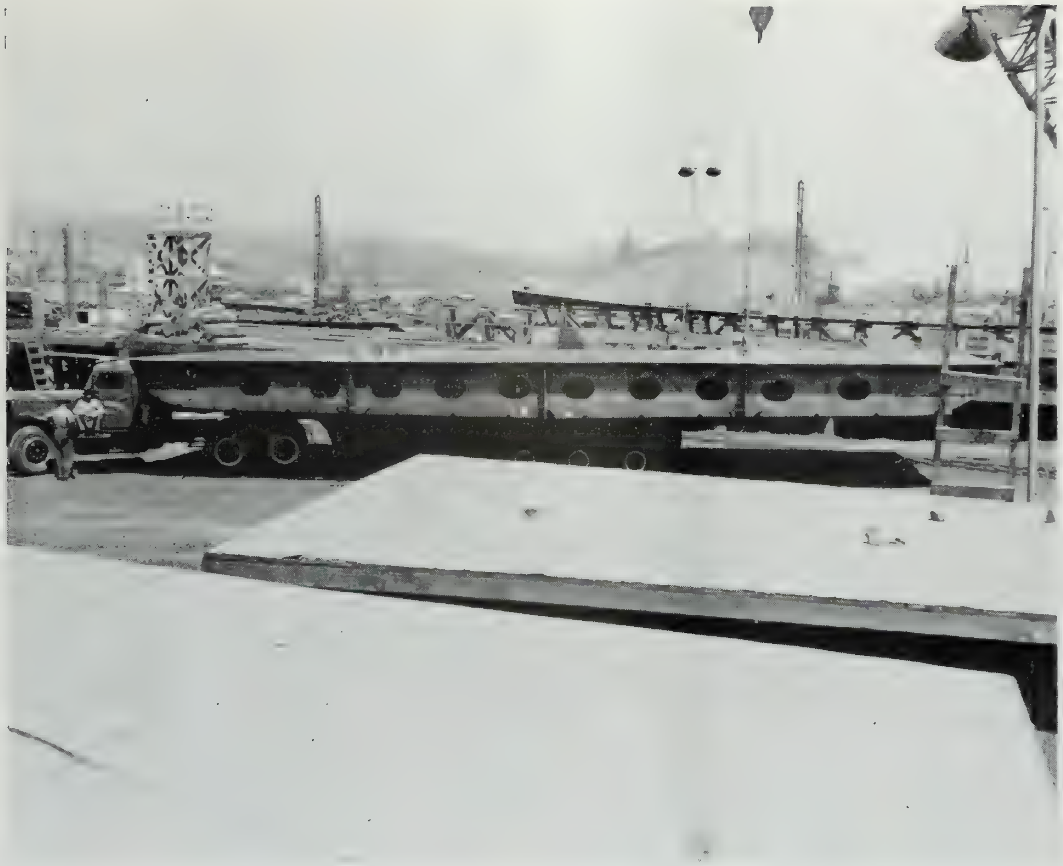
Opposite the administration building, a huge in-yard training school building is under construction, where employees may fit themselves for better-paying jobs—a part of the upgrading system.

In addition to the training schools operated by "Marinship," classes are being conducted in high schools and junior colleges throughout northern California to supply the growing demand for shipyard workers. By January, the employment rolls at the Sausalito plant are expected to approach 15,000, which will include several hundred women, many of whom will be actually working at physical labor, such as welding and machine work. When the yard is operating full blast, the annual pay roll will total around $47,000,000.

Another problem which confronted "Marinship" executives was that of housing, inasmuch as Marin County did not offer sufficient accommodations to provide for the influx of new residents. The Federal Public Housing Authority has provided a partial solution to the problem by starting construction of war apartments and dormitories for families and single men within walking distance of the shipyard. These facilities will provide for about 2700 workers: 1200 single men, and 1500 family units; all in all, for a population of about 5000 persons.

A model community of practical dwellings, utilizing non-critical materials, is springing up in a natural amphitheater immediately north of the shipyard with something of the same rapidity which startles old residents.

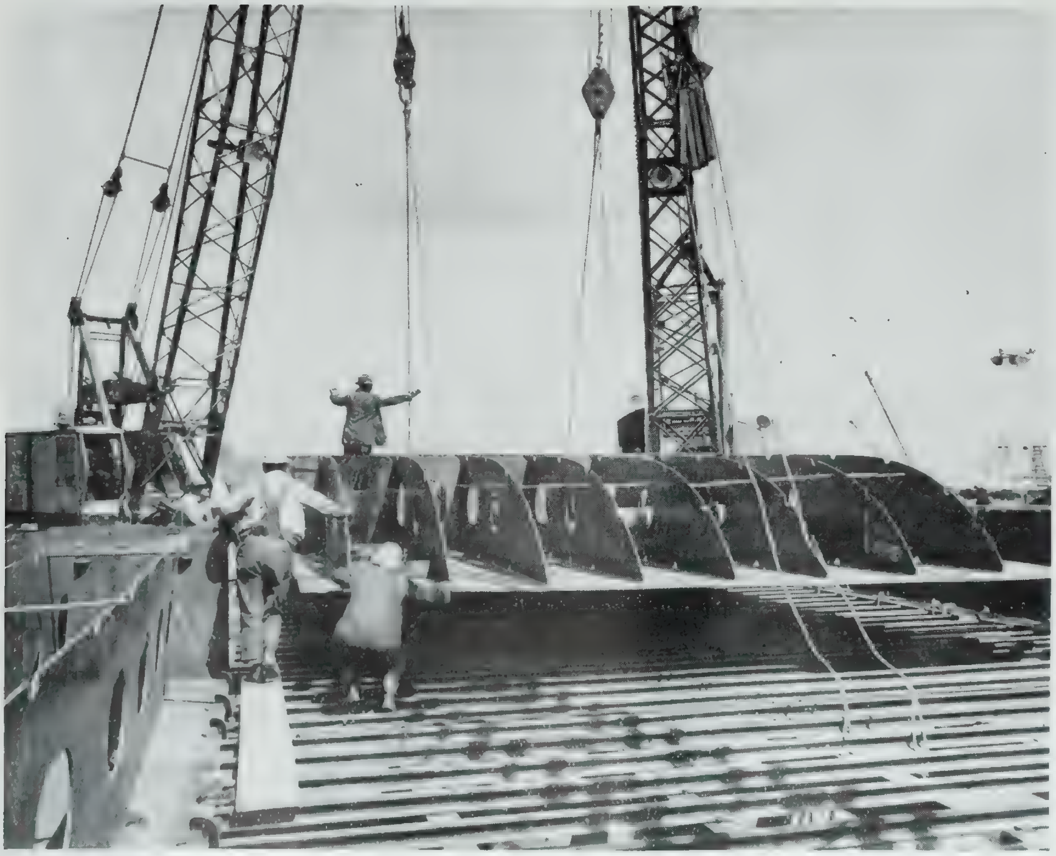
"Marinship's" industrial relations



FACING PAGE: WHIRLEY tower cranes will soon replace the temporary cranes, as shown here, and will move the double bottoms down tracks to the ways.

TRUCKS AND TRAILERS, a temporary expedient to keep construction moving, bring prefabricated double bottom sections from assembly to the ways. They will soon be replaced by cranes now under construction.

Prefabricated Sections



TRACTOR CRANES are also being temporarily used to lift and move double bottom sections.

department is mapping out a program to help provide Marin County with many of the community facilities and resources needed by the new industrial and service population, such as schools, parks, theater and recreational advantages. The program will be worked out in conjunction with established agencies and community leaders.

Hundreds of single-family homes are also being constructed by private contractors in the various nearby communities, under the provisions of Title VI of the FHA.

One more problem which has been met by the Bechtel management is that of transportation. Thousands of "Marinship" employees reside in San Francisco, necessitating establishment of facilities to transport the workers to and from their jobs with speed and economy.

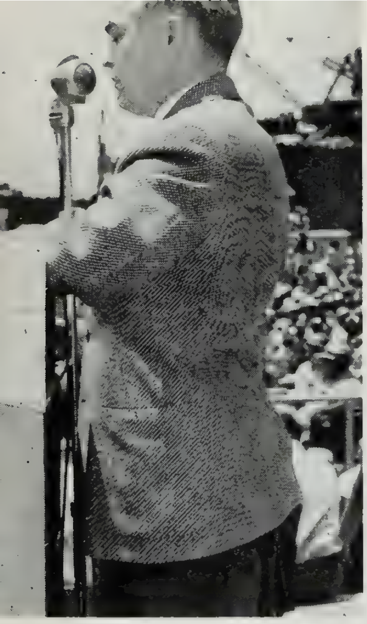
Desirous of setting up a service which would enable employees to reach Sausalito in the shortest possible time, a dual transportation system has been inaugurated. Serving the downtown area and Mission district, ferries will probably ply from the Ferry Building by late fall. Outlying residential sections are being served by special crosstown buses which go to Sausalito via the Golden Gate Bridge, while other buses carry downtown residents to their jobs. Both of these services are for the exclusive use of "Marinship" employees. As the rubber situation grows more serious, there will be fewer private automobiles used, which will entail additional buses.

Employees living in Marin and Sonoma counties currently are using private cars and buses, and it is contemplated that supplementary transportation facilities will be installed.

There are some who believe that the shipyard may develop into a permanent industry. Of this, nothing can be definitely said, but K. K. Bechtel, vice president in charge of "Marinship," has said that, as long as America needs ships, there is likelihood that the yard will remain active. In any event, Marin County is now a potent contributing factor in the war effort.

Liberty ships from Sausalito will soon be joining those from other San Francisco Bay region shipyards in the all-important job of transporting armaments, foodstuffs and other materials of war to our fighting forces scattered over the face of the globe.

Lack of ships has created a serious bottleneck in the prosecution of the war. The United States Maritime Commission has adopted the slogan "Ships for Victory" and the bottleneck is definitely being broken. The Sausalito shipyard is playing an important part in the war production program, and P. H. Eichler, Jr., resident engineer for the Maritime Commission, predicts great things from the new plant.



CARL FLESHER
at mike.

Calship SMASHES ALL

DELIVERS FIFTEEN STEAMERS IN JUNE

ANOTHER LIBERTY JOINS THE VICTORY FLEET as the S. S. McKENNA leaves berth after delivery ceremonies.

All records for shipbuilding to date during the present war were smashed in June by the 40,000 employees of the big "Calship" yard on Terminal Island, Los Angeles. These men went all-out for victory and delivered 15 big EC-2 Liberty cargo steamers during the 30-day period.

Since this second largest emergency shipyard in America launched its first steamer on September 27, it has shown a continuous increase in speed of fabrication, construction and assembly. The first vessel, *John C. Fremont,* was delivered on February 21, 273 days after laying the keel; *Joseph McKenna,* the 15th vessel of June's deliveries, was completed on June 30, only 75 days after keel laying and 115 days ahead of schedule. The table of building construction progress herewith shows in very graphic manner how consistent has been this increasing tempo of erection and outfitting.

Also on the 30th of June, "Calship" launched S. S. *Junipero Serra,* the 11th launching for that month, just 41 days after her keel was laid. If the outfit-

S. D. Bechtel

THE GUIDING HAND AT CALSHIP

Although teamwork is responsible for Calship's enviable record, the coordinating leadership of Mr. Bechtel inspired the cooperation to make such a record possible. He got just that from all his employees and everyone in Southern California, including the traffic police, who on the last day of June escorted on a speed run from an inland community to the yard a truck loaded with an essential part for the Liberty ship Joseph McKenna. The workmen rushed the installation to complete this last ship of the 15, making possible a world-record delivery.

RECORDS!

ting time for this ship equals that for *Joseph McKenna,* she will be delivered in 59 days from keel laying.

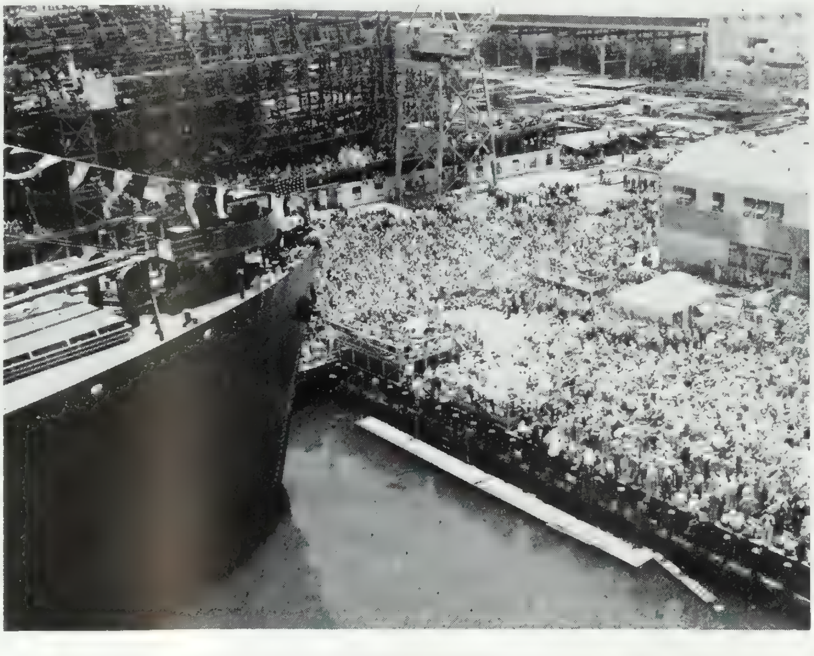
Special ceremonies were held at the yard for the double event on June 30. *Junipero Serra* slid down the ways at noon, following remarks by Mr. Jerome K. Doolan, general manager of the California Shipbuilding Corporation. Mrs. C. W. Flesher, wife of the West Coast Regional Director of Construction, United States Maritime Commission, served as sponsor for the vessel, shattering the traditional bottle of champagne over the bow of the ship. Mrs. Flesher was assisted by Mrs. John A. McCone as matron of honor.

Immediately following the launching ceremonies, the *Joseph McKenna,* 35th Liberty ship and 15th delivered during June, was towed from her berth in the outfitting docks into Los Cerritos Channel, proudly taking her place beside the *Junipero Serra*. Following introductory remarks by Mr. J. S. Sides, manager of production, California Shipbuilding Corporation, and Mr. C. W. Flesher, West Coast Regional Director of Construction, United States Maritime Commission, special arrangements from Washington, D. C. brought the voices of Admiral Emory S. Land, Chairman, United States Maritime Commission, and Admiral Howard L. Vickery, Director of Ship Construction, United States Maritime Commission.

A feature of the delivery ceremony was the presentation of the Maritime Commission "M" Flag of Merit. Mr. C. W. Flesher represented the Commission while Mr. Jerome K. Doolan, general manager, and Mr. Albert O. Pegg, outfitting manager, represented the California Shipbuilding Corporation.

Admiral Land made the following address over the wires from Washington:

"It is difficult for me to express to you men at 'Calship,' over more than



PART OF HUGE CROWD OF WORKERS at the launching-delivery ceremonies.

Prepared by office of
W. C. Allen, Naval Architect
Hull Engineering, Mold Loft Bldg.

SHIP PROGRESS COMPARATIVE DATA CHART
HULLS 1 to 35
Issued July 1, 1942

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Extension 75

USMC NO.	OUR NO.	S. S.	KEEL LAID		Days on Ways	LAUNCHED		Days in Berth	Total Const. Time	Dock Trial Date	Sea or Harbor Trial	Actual Delivery Date	Del. Per Month
			Date	Way		Date	Bth.						
64	1	JOHN C. FREMONT	5-24-41	1	126	9-27-41	1	147	273	2-7-42	2-12-42 2-19-42	2-21-42	1
65	2	THOMAS PAINE	5-24-41	2	155	10-26-41	2	132	287	3-2-42	3-5-42	3-7-42	3
66	3	BENJAMIN FRANKLIN	6-21-41	3	148	11-16-41	3	125	273	3-16-42	3-19-42	3-21-42	
67	4	JOHN PAUL JONES	6-26-41	4	160	12-3-41	4	118	278	3-26-42	3-29-42	3-30-42	
68	5	PAUL REVERE	7-10-41	5	164	12-21-41	5	108	272	4-2-42	4-7-42	4-8-42	5
69	6	DANIEL BOONE	7-17-41	6	181	1-14-42	6	91	272	4-11-42	4-14-42	4-15-42	
70	7	ROBERT MORRIS	7-22-41	7	190	1-28-42	7	86	275	4-16-42	4-20-42	4-24-42	
71	8	SAMUEL ADAMS	7-31-41	8	184	1-31-42	8	87	271	4-23-42	4-27-42	4-28-42	
277	9	ALBERT GALLATIN	9-11-41	9	154	2-12-42	9	77	231	4-27-42	4-30-42	4-30-42	
72	10	NATHAN HALE	9-29-41	1	128	2-4-42	10	92	220	5-6-42	5-7-42	5-7-42	11
278	11	OLIVER HAZARD PERRY	9-15-41	10	156	2-18-42	Cons.	80	236	5-7-42	5-8-42	5-9-42	
279	12	ELBRIDGE GERRY	9-22-41	11	159	2-28-42	Cons.	81	240	5-19-42	5-20-42	5-20-42	
73	13	ZEBULON PIKE	10-27-41	2	120	2-24-42	1	74	194	5-8-42	5-9-42	5-9-42	
280	14	RUFUS KING	10-6-41	12	156	3-11-42	Cons.	79	235	5-28-42	5-29-42	5-29-42	
281	15	ABIEL FOSTER	10-13-41	13	160	3-22-42	3-1	55	215	5-15-42	5-16-42	5-16-42	
282	16	BENJAMIN GOODHUE	10-20-41	14	162	3-31-42	4-10	50	212	5-19-42	5-20-42	5-20-42	
74	17	HENRY KNOX	11-17-41	3	109	3-6-42	2	67	177	5-12-42	5-13-42	5-13-42	
75	18	ABRAHAM CLARK	12-3-41	4	120	4-2-42	Cons.	69	189	6-9-42	6-10-42	6-10-42	
76	19	WILLIAM FLOYD	12-22-41	5	107	4-8-42	5-1	45	152	5-22-42	5-23-42	5-23-42	
77	20	JOHN LANGDON	1-14-42	6	90	4-14-42	Cons.	67	157	6-19-42	6-20-42	6-20-42	
78	21	CALEB STRONG	1-28-42	7	78	4-16-42	6-10	41	119	5-26-42	5-27-42	5-27-42	15
79	22	PAINE WINGATE	1-31-42	8	80	4-21-42	7-1	35	118	5-28-42	5-29-42	5-29-42	
80	23	JAMES MONROE	2-5-42	1	81	4-27-42	8-10	35	118	6-2-42	6-3-42	6-3-42	
283	24	JOHN HATHORN	2-12-42	9	77	4-30-42	9-1	37	114	6-5-42	6-6-42	6-6-42	
284	25	EDWIN MARKHAM	2-18-42	10	76	5-5-42	4-10	35	111	6-8-42	6-9-42	6-9-42	
285	26	GEORGE MATTHEWS	2-28-42	11	70	5-9-42	3-1	33	103	6-10-42	6-11-42	6-11-42	
81	27	F. A. C. MUHLENBERG	2-24-42	2	78	5-13-42	2-10	31	109	6-12-42	6-13-42	6-13-42	
82	28	JOHN B. ASHE	3-6-42	3	71	5-16-42	5-1	30	102	6-15-42	6-16-42	6-16-42	
286	29	JOHN PAGE	3-11-42	12	69	5-19-42	6-10	30	99	6-17-42	6-18-42	6-18-42	
287	30	JAMES SCHUREMAN	3-22-42	13	62	5-23-42	7-1	28	90	6-19-42	6-20-42	6-20-42	
288	31	PETER SILVESTER	3-31-42	14	57	5-27-42	8-10	26	83	6-21-42	6-22-42	6-22-42	
83	32	EGBERT BENSON	4-2-42	4	62	6-3-42	9	21	83	6-23-42	6-24-42	6-24-42	
84	33	ISAAC COLES	4-8-42	5	60	6-7-42	4-10	19	79	6-25-42	6-26-42	6-26-42	
85	34	STEPHEN JOHNSON FIELD	4-14-42	6	56	6-9-42	3-1	19	75	6-27-42	6-28-42	6-28-42	
86	35	JOSEPH MCKENNA	4-16-42	7	57	6-12-42	2	19	75	6-29-42	6-30-42	6-30-42	

3000 miles of telephone wire, the full measure of congratulations and the true feeling of gratification which you deserve for your outstanding June shipbuilding achievement.

"It would give me double pleasure to be able to clasp the hand of every man in your great shipyard, for those hands are providing all America today with assurance that ultimate victory will come to the United Nations.

"This is a fast-moving war. It brooks no delay. Possible victory today turns into defeat tomorrow unless we are on time. You men are proving that we can be on time. We have heard much in the past about 'too little too late,' but with such production records as you are making, that becomes a part of the past.

"Our achievements of today, however, must not permit us to rest content. We must do even more, even faster.

"This is the most devastating war humanity has ever known. All of us are sustaining terrific losses, losses in ships, in equipment, in men—yes even at times in confidence.

"We have seen dark days. We shall see more, but it is achievement like yours that helps to dispel dark clouds of doubt and despair. You are making a contribution to your nation's war effort that stands out notably. You are leading the way for the American shipbuilding industry—the greatest in the history of the world—to new heights of victorious effort.

ABOVE: S. D. Bechtel, president of Calship; Carl W. Flesher, West Coast Regional Director of Construction, U.S.M.C., and Calship's Vice President J. A. McCone and General Manager J. K. Doolan.

BELOW: Exciting moment after the champagne bottle has been shattered against the prow of the Junipero Serra. The jubilant participants are C. W. Flesher, Mrs. Flesher, sponsor, and Mrs. John A. McCone, matron of honor.

"When this war is ended and the victory ours, I am fully confident that the record of American shipbuilders will be one of the brightest chapters in our war story. You men are writing part of that chapter today. Your children and their children will find prideful satisfaction, yes even glamour, in your achievement; your present reward is the knowledge of a job well done. It may be difficult for you to sense that your daily routine with the welder's torch, the riveter's gun on the ways or in the shops is anything but just hard work, but I can assure you that you are building more than ships. You are building strength and confidence in American hearts.

"I know that the workers and the management of 'Calship' are not content and that you will not rest upon your present laurels. You have done and are doing a great job. You will do even a greater one. We of the Maritime Commission and the War Shipping Administration are sure of that.

"And now I bring to you a man of whom we are all proud, one whose tire-

S. S. JUNIPERO SERRA ON HER WAY

less energy and creative genius are responsible in a great degree for the unprecedented expansion and success of our nation's merchant shipbuilding program—Admiral Howard L. Vickery, Vice Chairman of the United States Maritime Commission and Deputy Administrator of the War Shipping Administration."

Said Admiral Vickery:

"Fellow shipbuilders: Nothing in this struggle for the preservation of our liberties is more important than ships. Without them the production by the thousands of tanks, planes and guns may avail us little.

"Your responsibilities are great indeed. Our fighting men on the battle fronts on every continent of the world are depending on you for ships to supply them with the things they need on time. It is obvious that you are aware of that responsibility and that you are proving yourselves equal to the gigantic task that has been cut out for you.

"I believe it is an inspiration to the nation that you on the West Coast are continually breaking records. A few weeks ago, a yard to your north broke the world's record for the construction time of a ship when the S. S. *Thomas Bailey Aldrich* was delivered into service just forty-six days after her keel had been laid. Today, you too are hanging up a new world's record—a production record—one of concrete proof that we'll win this war. I join my chief, Admiral Land, in offering you, the workers and management of the California Shipbuilding Corporation, congratulations and the thanks of 130,000,000 Americans for the part all of you are playing in bringing victory to the Stars and Stripes.

"Thus, it becomes our pleasure to award the merit 'M' burgee, signifying the highest Maritime Commission tribute, to the California Shipbuilding Corporation. The purpose of this award is twofold: first, to confer recognition of your achievement in the vital work of ship production and, second, to serve as an incentive for even greater accomplishment. And at each interval hereafter when you have delivered ships consecutively from all your shipways in 105 days or less—which I hope will be not less frequently than once a month—you will be permitted to add a star to your 'M' burgee. There is no reason, if you speed kings will continue in the months to come as you have in June, why your burgee in time cannot look like the Milky Way. In addition, the Commission is sending to all the employees of the California Shipbuilding Corporation its Labor Merit Award Badge—our thanks and recognition for the work you have done. Let your pride in wearing it be equal to the appreciation of the Maritime Commission that is presenting it to you.

"Now, the Commission has had its problems, not the least of which has been furnishing you the steel and the machinery you need to build ships. When the other yards attain the pace you are setting, our problems in procurement will be even more difficult. But, inspired by the show you and the other shipbuilders of America are putting on, the Maritime Commission is facing the future of the shipbuilding effort with confidence. Just how all our problems will be solved, only time will tell—but solved I know they will be. Come Hell or high water, I know the shipyard workers of America will continue to deliver the ships."

J. K. DOOLAN

General manager of Calship, acted as master of ceremonies in the celebration of the 15-ship delivery record.

An Ancient Mariner's Log

HE PIRATED THE NEW WORLD ROUND THE HORN IN 1850

ABOUT FEBRUARY 1, 1850, Captain Edgar Wakeman arrived in New York in command of a brig from Pensacola. Captain Wakeman, as everyone knows who has read his "Log of an Ancient Mariner," was a man of resolution and quick decision. As the brig was being made fast to the pier, he noticed in a nearby shipyard three steamboats almost ready for launching. One of these took his fancy, and he went over for a closer inspection.

"Who owns this steamer?" he asked of a man who was passing. "I do," replied the man. "What do you want of her?" "I want to take her to California," said Wakeman. References were exchanged, and Wakeman got the job.

He went home to visit his folks for a week and on his return found his steamer *New World* ready for launching but in charge of the sheriff on a $50,000 judgment. A deputy sheriff and a squad of keepers had usurped quarters aboard and refused to move off even for the launching ceremony.

Captain Wakeman had his chief engineer arrange to get steam up on the boilers for the launching so as to make a big impression, and the *New World* was launched with a fine plume of smoke steaming from the stacks.

After a good trial trip, she tied up at the pier and Captain Wakeman pushed preparations for the long voyage just as if there was no sheriff within a thousand miles. On Saturday, February 16, he was ready for sea. The captain went aboard about dark, his register having been retained ashore. To the sheriff's posse, who were strolling on deck in the rain, he remarked, "Come in out of the rain, gentlemen; no man could go to sea on a night like this, however much he might desire it."

A couple of hours later, he received a note from the owner written in a very poor hand, which he read to this effect: "You must go to sea tomorrow morning," although it appeared afterward that the owner had intended to write "You must not go——."

The captain then made all arrangements to sail in the morning. At daylight, the weather cleared and the engine crew under orders and locked below began to get steam up. About eight o'clock it was evident to everybody on board that she was ready to leave the dock. The captain, who had locked himself in the pilot house, took off his hat—a prearranged signal—whereupon a man on the dock cut the hawser with an axe; the engineer got two bells; and the *New World* swung smartly out into the river.

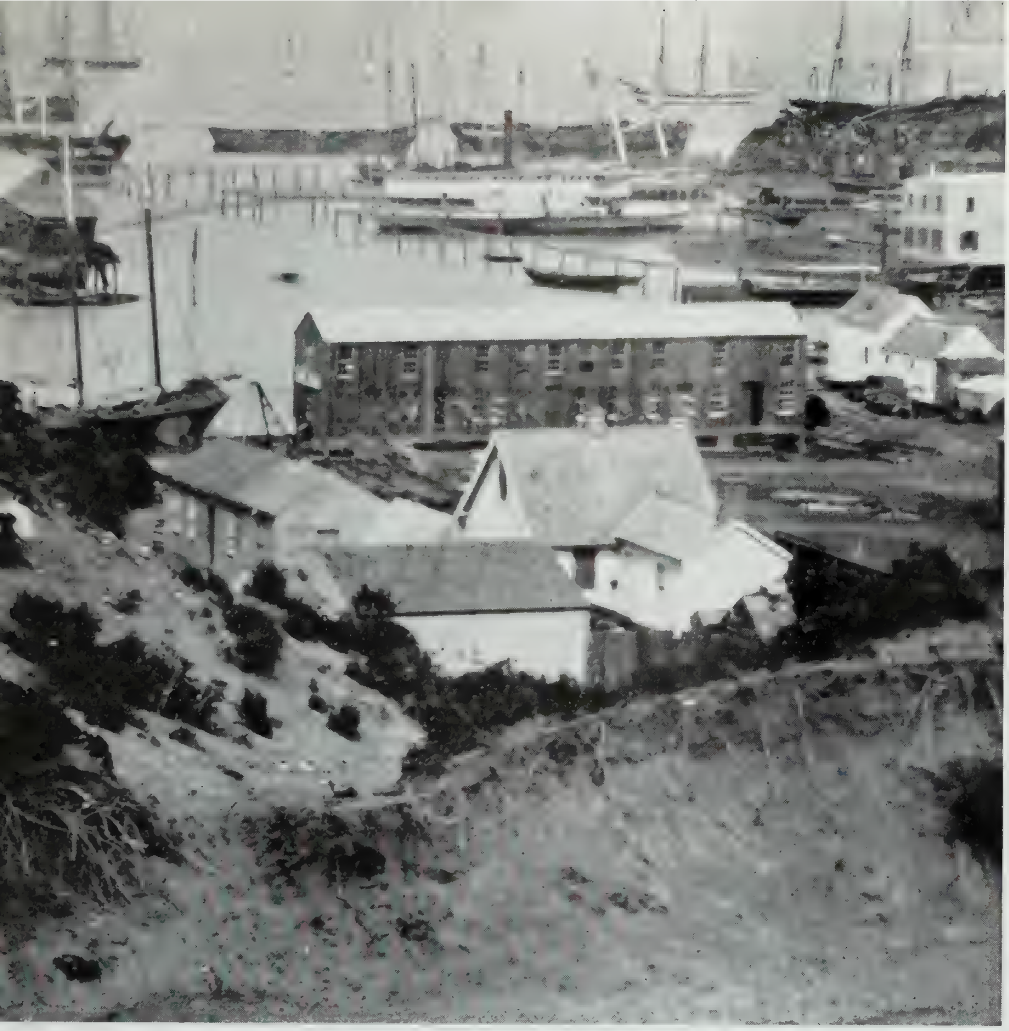
WHEN THE TIE ROD BROKE, Captain Wakeman shinnied up the A frame and substituted the anchor chain for the broken rod.

Meanwhile, the posse was running up and down the deck shouting orders and cursing the captain and crew, none of whom were in sight.

Captain Wakeman called up a mate from below, handed the wheel over to him and stepping out on deck inquired, "What's the matter with you gentlemen." "We command you to take this ship back to the dock," replied the marshals. "Keep cool, gentlemen," said the captain, "sometime in the future this vessel will doubtless sail for California, and we have to warm her up and keep her in trim for that long trip."

So they cruised up to Blackwells Island, turned and ran down to the Battery and west into the North River and up to Canal Street. Turning here. the captain went into the pilot house and, locking himself in, ran down North River full speed and steered for Staten Island and into the Narrows where the steamer was stopped close inshore. After considerable heroics, the captain whistled all hands on deck. The crew came up armed and instantly overpowered the posse. The latter were put in a small boat in charge of the mate, "an ugly looking fellow, having a broken nose and deep gashes in his chin." This mate was armed with a sharp hatchet and given this order, "After you land these gentlemen, if you find anything like an encumbrance fast to the gunwale as you are backing out, clear it away with this tool."

So the sheriff and his men were put ashore and the *New World* put out to

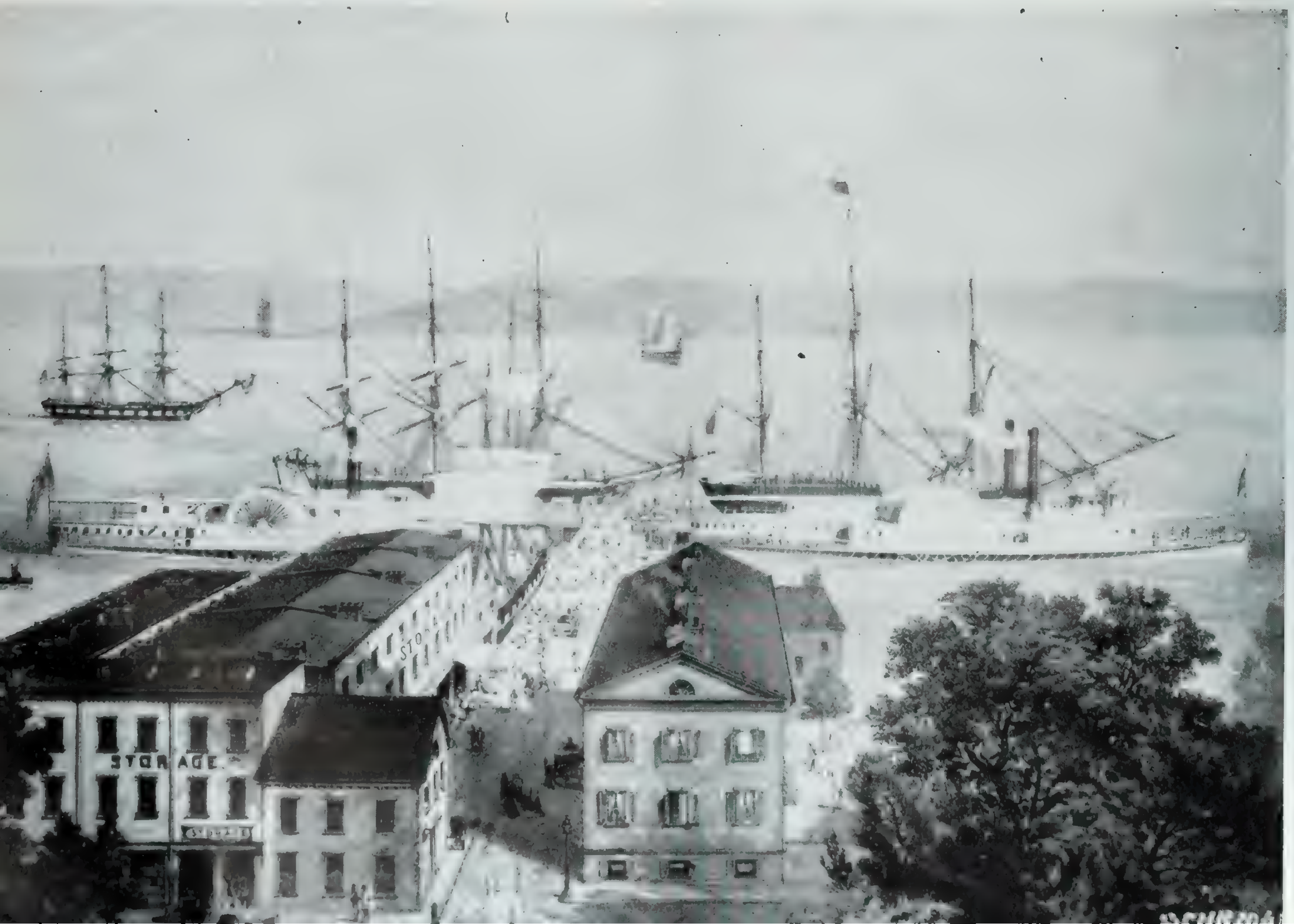


San Francisco in The Fifties

UPPER VIEW, about 1851, shows the waterfront just north of Rincon Point. Steamer New World, upper center.

LOWER VIEW shows the famous T wharf and warehouse with river steamers New World and Senator inshore of the T head, and two clipper ships on the outboard side.

(Photos from Behrman Collection)



sea. This vessel was not built like a seagoing steamer but like a river steamboat. As will be noted in the illustrations, she had sidewheels, was of rather shallow draft and depth of hull, and had heavy steel rod ties on hogging frames to strengthen the shallow wooden hull. One of the rods snapped in two on a stormy night. Captain Wakeman thus described the emergency repairs:

"I took a small rope in my hand and went on top of the hog frame which was in the form of a letter A, with its two legs fifty-seven feet long. When I got up, the end of the bower chain had been brought aft and bent into the line so that I could haul it up; this I did, took a round turn, made it fast and came down on it; then I put the bight through the turnbuckle and set it up taut as the boat sprang up in the middle."

Pernambuco was the first stop; then Rio de Janeiro, off which they had to make a fast run to escape overhauling by a British frigate. Without register, the *New World* was a legitimate prize for any navy vessel.

Captain Wakeman ran the *New World* into the harbor and anchored close to an American "man-of-war." Then he got out the tin box with all the ship's papers he had and got into the ship's small boat and pulled ashore. Halfway in, he "happened to fall overboard and lose the box." Ashore, wet through, he went up to the American Consular office and told of his accident and the loss of his papers. The kindly consul fixed him up with new papers, including the register.

Here the *New World* was recaulked and fastened below bilges on both sides, thoroughly cleaned and whitewashed all through below decks. It was a bad time in Rio. Yellow fever was raging. Captain Wakeman buried 18 of his officers and crew.

When the ship was ready and coaled, the captain was able to sign on new members for his crew at $1.00 a month. Men came on board and begged to be taken out of that graveyard.

So, they got out to sea and made a straight course for the Strait of Magellan and up to Valparaiso, to Callao, to Panama. At the latter port, there were two U. S. Marshals waiting with a bench warrant for the arrest of Captain Wakeman on a charge of piracy and with papers entitling them to seize the *New World*. There were also four or five hundred prospective passengers for California willing to pay from $300 to $400 apiece for the passage. So Captain Wakeman easily contrived to sail from Panama on the 20th of June with 217 passengers at $300 a head. They stopped at Acapulco for coal, and on coming out of that harbor scudded along before a strong southeast gale with heavy seas.

In the midst of this gale, she began to slow down, and the chief reported that the steam chest was apparently cracked and leaking badly. Emergency repairs were made by passing a chain three times around the cylinder and tightening it by driving iron wedges between the chain and the flat face of the steam chest. This held with a fair pressure of steam until the captain was able to navigate her into a little land-locked bay and run her bow onto a little sandy beach. Here four days were spent in filling all tanks with fresh water, in drying provisions, clothes and bedding, and in making the emergency engine repair as snug as possible. Then they backed out and headed for San Diego. Here they could get no coal but heard of a sailing vessel at San Pedro with 40 tons aboard. They were lucky enough to find that ship and bought the coal from her and then put north for San Francisco.

AT RIO, he "accidentally" upset his boat, got soaked and lost his papers, including some he never had.

Running into the Golden Gate, they got all flags out and, putting on all the steam they dared, "ran up around Clark's Point at the rate of 18 miles an hour, and found the ships so thick that we could not anchor and swing, so we made fast to a ship stem and stern."

At high water, they "ran a line out and hauled into some piles that were being driven for what was later Cunningham Dock." So they made fast and put out a gangplank on the morning of the 11th day of July, 1850.

The steamboat *New World* was immediately put in service on the bay-and-river run between San Francisco and Sacramento. One of our illustrations shows her during this period at the famous old T wharf.

Britain's Women Fight Hitler

In connection with the growing urge to war work among American women, the following note from London is of interest:

A new welding machine recently sent to Britain from the United States is being used with great success in training the women who are today helping to build ships for the battle of the oceans.

The women become good electric welders after a brief training. A growing number of them are now working alongside their menfolk in the yards of the Tees, Tyne, Wear, Mersey and Clyde.

They are taking over the lighter jobs such as painting a ship's structure; every week more and more of them are to be seen high up on the staging.

Heavier work like riveting is not quite their line, but they make excelent rivet heaters. They are to be found on repetition work in the machine shops. They make piston rings. They assemble valves. In oil engine works on the Clyde, theirs is the chief labor used in building oil coolers.

Women are even taking over work as fitters on the lower parts of heavy marine engines, which can be reached from the floor or the first staging.

And everyone is agreed that they are a success: the Government, the employers, the trade unions, and—the women themselves.

Shipbuilder

A CLEARING HOUSE FOR IDEAS ON THE WAR-WINNING JOB OF WHOLESALE PRODUCTION ON SKILL IN THE MARITIME CRAFTS

Welders

ARE TRAINED-NOT BORN

By Richard C. Wiley

Welding Instructor, Peninsula Defense Training Center

THE MAN WITH the helmet and goggles—he's not a flyer, but he is an important part of the war effort, and it is partly through his skill and art that modern warships and cargo vessels are built. Throughout the night the glare from his electric arc may be seen in all parts of the ship. The welded ship is the answer to the present production demand; arc welding helps to build ships faster and better.

The numbers of "old timers" in arc welding were few before the present shipbuilding program was started. The men already trained were but a handful compared to the great number of welders needed on the job today . . . and tomorrow. Where, then, will industry get its "new recruits," trained and ready to work?

In 1940, the Advisory Commission to the Council of National Defense designated the United States Office of Education as the proper agency to administer the granting of Federal aid through the states for a program of vocational education for training in occupations essential to national defense. Under the authority of Federal, state and local public school systems, vocational training schools were set up throughout the country. The Peninsula Defense Training Center, located in Palo Alto, is one such school, and the training of welders is a part of its program.

A great many people have the mistaken idea that the welder just passes his electrode over and the job is done. However, arc welding is a complicated process not altogether understood even by metallurgists, and its effect is to actually melt the pieces of steel together. The skill and technique of an expert operator take much time, practice and ability to achieve, and are not simple or easy to master, as any trainee will agree after he has tried making the arc do its work.

The Peninsula Training Center welding shop is well equipped with welding generators of the same makes and models as are used in the shipyards, thus enabling the trainee to learn to weld with the same machines that he will later use out in industry. This applies also to the electrode or "rod" as it is usually called, and the material on which the trainee uses this rod is scrap steel plate, which is "borrowed" from a nearby iron works, the scrap later being returned with a generous supply of weld metal, whereupon it is melted down to make machinery.

LET'S SWAP IDEAS

There are hundreds of you supervisors and instructors and thousands of you trainees in the schools that are trying to produce shipyard craftsmen and merchant seamen. Pacific Marine Review wants to help you, and in order to do so with some degree of intelligence, Pacific Marine Review would like to see you all swapping ideas through the medium of this training section.

There is probably not one of you to whom at sometime or other it has not seemed that the system, or the lesson, or the practice period might have been better if changed according to your ideas.

Send us in those ideas. Perhaps, put together with other ideas, they may be of great help.

And Seaman Training

ON FACING PAGE, we show Betty Whisenhunt and Lena Pitzer, burning trainees at Marinship School.

AT RIGHT: MOCK-UPS AND MODELS are great aids to visual instruction at the Marinship schools.

In turn, another load of scrap steel plate is delivered to the training center. There are also facilities available for oxy-acetylene cutting, gas welding and aircraft welding.

The prospective welder first makes application for this free training through the United States Employment Service. When a vacancy exists in the class, he is notified to come to the training center where he is cleared through the office and sent to the welding shop to begin training.

Sam Jones Starts Training

The training center draws its enrollment from San Jose to San Mateo, thus there is available a large supply of men capable of being trained and later to be employed in the heavy industry of the Bay area. Let us suppose that one Sam Jones has found his way to the welding shop at the training center. Jones is a little uneasy when he first comes into the class, because mixing concrete was never quite like what he sees going on here. Sparks are flying, the arc glares, the generators roar, and men inside the booths with black hoods over their faces are intent upon their work. The first thing Jones learns is that he must keep his hood on when working with the arc in order to protect his face and eyes from the rays which may burn him far more severely than sunburn. He is also reassured that there is no danger in going blind (which is a common belief) if he uses ordinary care and the usual safety measures. Further safety precautions designed to protect himself, others, and the equipment are impressed upon the beginner. In order to pass the minimum requirements Jones must learn how to make the five principal types of joint: butt lap, tee, corner, and edge in the four welding positions: flat, horizontal, vertical, and overhead.

The instructor gives much of his personal attention to the men who are just beginning and those who are advancing to new jobs. He also conducts group discussions where the trainees air their troubles and ask questions, and further there are "chalk talks" on the theory of welding and on proper manipulation and technique. After a couple of weeks, Sam Jones is very much at home; he is progressing satisfactorily and has begun to do welding in the vertical position. He has picked up some of the welder's language, and calls the electrode holder a "stinger." He "burns 'em short," which makes for economy in the use of welding rod; and he has earned the nickname of "Close-arc Jones" because of his fault of holding the rod too far from the molten puddle when he should have held it closer.

Jones Takes Tests

In about two hundred and forty hours of continuous training, Sam Jones has completed the course and is ready to take a qualification test at any of the numerous shipbuilding plants in the Bay area. These tests are not easy to pass, and the applicant is under a nervous tension; but, barring an attack of "welder's cramp," or if he is told to make a stringer bead and

he turns in a test plate that looks more like a string of beads, he is qualified for a job as welder. He is referred to the union having jurisdiction over the welders in that area, and after paying one-half of his initiation fee, he is given a union clearance and sent back to the shipyard where he is fingerprinted, photographed, given a badge and reports for work. Though Sam Jones is now employed as a welder, he is far from an expert welding operator, but he is capable of performing many simple jobs which are essential to ship construction. Time and experience plus his ability and hard work will eventually make him a real welder, capable of doing any job he may be called upon to do.

After the war is over, there will be trained men in welding to help patch up the damage the war has caused, to help rebuild what has fallen, to carry on with manufacturing production, to aid in the construction of new projects, and to assist in the effort to create a better civilization. It must be remembered that welding is essentially a building tool, and, as such, it will serve this country as well in peace as in war.

First Woman Welder . . .

HERE IS MRS. DOROTHY GIMBLETT, first woman journeyman welder at Marinship. Working as a domestic, she took training at night, qualified on her welding tests, and is now the equal of any man welder in the yard.

U. C. War Training Program

More than 20,000 trained workers for war industries—that is the record of the University of California War Training Program. Reports from Washington, D. C., disclose that the university's total enrollment in these specially designed courses in engineering, science, and management, since the beginning of the program in August, 1941, has been greater than that of any other university in the nation.

Eighty per cent of the trainees in these courses are in-service personnel, that is, directly from war industries, and are taking courses for a more accurate or more specialized knowledge of their own field. Of extreme importance also are the pre-employment courses, to prepare both men and women for the increasing number of jobs in production for war.

Classes have been established in thirty California cities to make instruction readily available for workers in the oil industry, shipbuilding and aircraft production.

The greatest demand is for training in tool engineering, shipbuilding, aircraft drafting, and safety engineering.

Tool engineering, bottleneck of aircraft production, is receiving much emphasis. One major plane company has asked that 3000 men be trained during the next few months for their plants alone.

Girls Prepare for Wartime Jobs

First applicants for the burning class at the new Sausalito Training School, operated by the Marin Shipbuilding Division of the W. A. Bechtel Co., were the two young women shown in our illustration, who are deserting peace-time occupations to learn a shipbuilding trade in order that they may make a real contribution to the war effort.

(Picture on page 58)

Mrs. Betty Whisenhunt, San Francisco stenographer, and Miss Lena Pitzer, Sausalito soda fountain clerk, are now receiving free instruction and, after approximately 40 hours of training, will be employed as helpers. An additional 40 hours of schooling will qualify them as journeyman burners.

Mrs. Whisenhunt, who has not seen her sailor husband since their marriage several months ago, joined the burning class in order to fit herself for a wartime job in the Marinship yard, now engaged in building Liberty cargo vessels for the United States Maritime Commission. She told reporters she is anxious to do her part to help win the war. The same feeling was expressed by Miss Pitzer.

Book for Trainees

The Marine Power Plant, by Lawrence W. Chapman; 406 pages, 6"x9"; 142 illustrations, and 25 tables; bound in green buckram with gold stampings; published by McGraw-Hill Book Company, New York. Price $4.00 net.

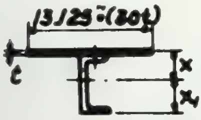
Lawrence B. Chapman, professor of marine transportation and marine engineering at the Massachusetts Institute of Technology, in 1922 brought out a book on "The Marine Power Plant," which became practically a standard American textbook on the subject. The volume under review is a second edition (completely rewritten and brought up to date), which will undoubtedly become the present standard textbook.

"More attention has been given to fuel oils, combustion, geared turbines, and fuel oil systems than in the first edition. The space devoted to diesel engines has been greatly increased. The power plant computations in the last chapter are completely new, and the data used conform to present-day practice."

Author and publisher are to be congratulated on a very fine job of book production. We can recommend this volume unreservedly to all trainees, students, designers and operators in marine engineering.

EQUIVALENT WELDED SECTIONS

THESE TABLES are part of a set of seven. The other four were published in our July issue. They are sponsored by Joslyn and Ryan, naval architects of San Francisco. They are convenient for checking calculations, but trainees should never substitute tables for calculations.

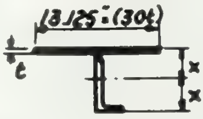


RIVETED SECTIONS

x 30t(13.125") PLATING INCLUDED IN SECT.

.44" PLATING

13.125"x.44"PL.x5.74 SQ.IN.



EQUIVALENT WELDED SECTIONS

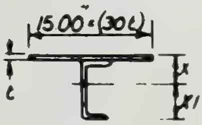
x 30t(13.125") PLATING INCLUDED IN SECT.

.44" PLATING

13.125"x.44"PL.=5.74 SQ.IN.

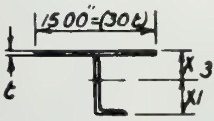
TOTAL AREA	MOMENT OF INERTIA	X	X_1	RIVETED SECTION	SECTION MODULUS	SECTION MODULUS	EQUIVALENT WELDED SECTION	MOMENT OF INERTIA	X	X_1	TOTAL AREA
10.22	51.41	1.63	4.81	[-6x3.5x15.3#	10.69	10.80	L-6x3½x3/8	50.31	1.78	4.66	9.16
10.49	52.76	1.68	4.76	[-6x3x16.3#	11.08	11.84	L-6x4x3/8	54.09	1.87	4.57	9.35
						12.26	L-6x3½x7/16	55.41	1.92	4.52	9.71
10.51	71.97	1.91	5.53	[-7x2.95x16.4#	13.01	13.44	L-6x4x7/16	59.39	2.02	4.42	9.92
						13.59	L-6x3½x½	59.81	2.04	4.40	10.24
10.86	74.73	1.97	5.47	[-7x3x17.6#	13.66	14.53	L-7x4x3/8	75.97	2.21	5.23	9.73
						14.82	L-6x3½x9/16	63.72	2.14	4.30	10.77
						14.87	L-6x4x½	63.95	2.14	4.30	10.49
11.56	80.19	2.09	5.35	[-7x3.1x20#	15.00	16.24	L-6x4x9/16	68.21	2.24	4.20	11.05
11.29	81.84	2.05	5.39	[-7x3.45x19.1#	15.18						
11.64	84.46	2.11	5.33	[-7x3.5x20.3#	15.85						
11.17	101.59	2.27	6.17	[-8x2.97x18.7#	16.47	16.51	L-7x4x7/16	83.52	2.38	5.06	10.37
11.37	103.64	2.31	6.13	[-8x3x19.3#	16.91	17.54	FL.PL.8x4x.38	102.96	2.57	5.87	10.16
11.57	105.53	2.35	6.09	[-8x3.02x20#	17.33	18.23	L-7x4x½	89.86	2.51	4.93	10.99
11.97	114.40	2.42	6.02	[-8x3.45x21.4#	19.00	19.72	L-8x4x7/16	112.23	2.75	5.69	10.80
12.37	118.09	2.48	5.96	[-8x3.5x22.8#	19.81	20.00	L-7x4x9/16	95.99	2.64	4.80	11.62
						20.58	FL.PL.9x4x3/8	133.98	2.93	6.51	10.54
						21.84	L-8x4x½	121.00	2.90	5.54	11.49
						23.20	FL.PL.9x4x7/16	146.42	3.13	6.31	11.27
12.70	154.42	2.81	6.63	[-9x3.45x23.9#	23.29	23.81	FL.PL.10x4x3/8	169.98	3.30	7.14	10.92
						23.94	L-8x4x9/16	129.26	3.04	5.40	12.17
12.12	179.91	2.97	7.47	[-10x3.45x21.9#	24.08	25.68	FL.PL.9x4x½	157.65	3.30	6.14	11.99
13.15	159.36	2.88	6.56	[-9x3.5x25.4#	24.29						
12.62	187.08	3.07	7.37	[-10x3.5x23.6#	25.38						
12.97	195.83	3.13	7.31	[-10x3.4x24.9#	26.79	26.84	FL.PL.10x4x7/16	185.71	3.52	6.92	11.71
						27.20	FL.PL.11x4x3/8	211.03	3.68	7.76	11.30
14.07	176.55	3.01	6.43	[-9x4x28.6#	27.46	28.03	FL.PL.9x4x9/16	167.87	3.45	5.99	12.71
13.47	202.47	3.22	7.22	[-10x3.45x26.6#	28.04	29.60	FL.PL.10x4x½	199.24	3.71	6.73	12.49
13.97	209.06	3.30	7.14	[-10x3.5x28.3#	29.28	30.66	FL.PL.11x4x7/16	230.60	3.92	7.52	12.15
14.05	218.05	3.31	7.13	[-10x3.95x28.5#	30.58	30.76	FL.PL.12x4x3/8	257.44	4.07	8.37	11.68
14.55	224.41	3.33	7.11	[-10x4x30.2#	31.56	32.44	FL.PL.10x4x9/16	213.12	3.87	6.57	13.27
						33.94	FL.PL.11x4x½	248.45	4.12	7.32	12.99
						34.65	FL.PL.12x4x7/16	281.34	4.32	8.12	12.59
						37.04	FL.PL.11x4x9/16	264.85	4.29	7.15	13.83
14.74	317.20	4.02	8.42	[-12x3.45x30.9#	37.67	38.28	FL.PL.13x4x7/16	338.35	4.60	8.84	13.03
						38.38	FL.PL.12x4x½	303.18	4.54	7.90	13.49
15.34	328.55	4.11	8.33	[-12x3.5x32.9#	39.44	41.89	FL.PL.12x4x9/16	323.36	4.72	7.72	14.39
						42.12	FL.PL.14x4x7/16	402.20	4.89	9.55	13.47
						42.99	FL.PL.13x4x½	364.52	4.96	8.48	13.99
15.04	397.78	4.38	9.06	[-13x4x31.8#	43.91	46.97	FL.PL.13x4x9/16	388.94	5.16	8.28	14.95

EQUIVALENT WELDED SECTIONS



RIVETED SECTIONS
30t(15.00")PLATING INCLUDED IN SECT.
.50" PLATING

15.00" X .50" PL. = 75 SQ.IN.

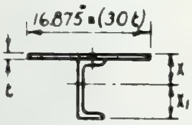


EQUIVALENT WELDED SECTIONS
30t(15.00")PLATING INCLUDED IN SECT.
.50" PLATING

15.00" X .50" PL. = 7.5 SQ. IN.

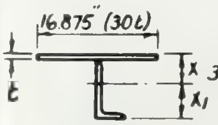
TOTAL AREA	MOMENT OF INERTIA	X	X1	RIVETED SECTION	SECTION MODULUS	SECTION MODULUS	EQUIVALENT WELDED SECTION	MOMENT OF INERTIA	X	X1	TOTAL AREA
12 27	76 87	1 71	5.79	[-7 X 2.95 X 16.4#	13.28	13.77	L-6 X 4 X 7/16	64.88	1.79	4.71	11.68
						13.96	L-6 X 3 1/2 X 1/2	65.48	1.81	4.69	12.00
12 62	80.08	1 77	5.73	[-7 X 3 X 17.6#	13.98	15.25	L-6 X 4 X 1/2	70.15	1.90	4.60	12.25
						15.26	L-6 X 3 1/2 X 9/16	70.03	1.91	4.59	12 53
13.32	86.28	1.89	5.61	[-7 X 3.1 X 20.0#	15.38	16.54	L-6 X 3 1/2 X 5/8	74.26	2.01	4.49	13.05
13.05	87.70	1.84	5.66	[-7 X 3.45 X 19.1#	15.49						
13.40	90.62	1.90	5.60	[-7 X 3.5 X 20.5#	16.18	16.75	L-6 X 4 X 9/16	75.21	2.01	4.49	12.81
12.93	108.80	2.03	6.47	[-8 X 2.97 X 18.7#	16.82	16.98	L-7 X 4 X 7/16	91.34	2.12	5.38	12.13
13.13	111.05	2.07	6.43	[-8 X 3. X 19.3#	17.27	18.11	L-6 X 4 X 5/8	79.68	2.10	4.40	13.36
13.33	113.24	2.11	6.39	[-8 X 3.02 X 20.0#	17.72	18.78	L-7 X 4 X 1/2	98.77	2.24	5.26	12.75
13.73	122.62	2.18	6.32	[-8 X 3.45 X 21.4#	19.40	20.24	L-8 X 4 X 7/16	122.86	2.43	6.07	12.56
14 13	126.88	2.24	6.26	[-8 X 3.5 X 22.8#	20.27	20.59	L-7 X 4 X 9/16	105.85	2.36	5.14	13.38
						22.31	L-7 X 4 X 5/8	112.21	2.47	5.03	13.99
						22.52	L-8 X 4 X 1/2	133.08	2.59	5.91	13.25
						23.87	FL.PL.-9 X 4 X 7/16	160.43	2.78	6.72	13.03
14 46	165.71	2 54	6.96	[-9 X 3.45 X 23.9#	23.81	24.72	L-8 X 4 X 9/16	142.62	2.73	5.77	13.93
13.88	192.67	2 66	7.84	[-10 X 3.45 X 21.9#	24.58						
14.91	171.39	2.61	6.89	[-9 X 3.5 X 25.4#	24.87	26.46	FL.PL.-9 X 4 X 1/2	173.34	2.95	6.55	13.75
14.38	200.72	2.76	7.74	[-10 X 3.5 X 23.6#	25.93	26.73	L-8 X 4 X 5/8	151.00	2.85	5.65	14.61
14.73	210.10	2.83	7.67	[-10 X 3.4 X 24.9#	27.39	27.58	FL.PL.-10 X 4 X 7/16	203.23	3.13	7.37	13.47
15.83	189 93	2.75	6.75	[-9 X 4 X 28.6#	28.14	28.95	FL PL.-9 X 4 X 9/16	185.25	3.10	6.40	14.47
15.23	217.67	2 91	7.59	[-10 X 3.45 X 26.6#	28.68						
15.73	225 04	3.00	7.50	[-10 X 3.5 X 28.3#	30.01	30.66	FL.PL.-10 X 4 X 1/2	220.11	3.32	7.18	14.25
15.81	234.17	3.01	7.49	[-10 X 3.95 X 28.5#	31.26	31.29	FL.PL.-9 X 4 X 5/8	196.16	3.23	6.27	15.18
						31.60	FL.PL.-11 X 4 X 7/16	253.09	3.49	8.01	13.91
16 31	241 42	3 09	7 41	[-10 X 4 X 30.2#	32.58	33.56	FL.PL.-10 X 4 X 9/16	235.28	3.49	7.01	15.03
						35.07	FL.PL.-11 X 4 X 1/2	273.55	3.70	7.80	14.75
						35.76	FL PL.-12 X 4 X 7/16	308.94	3.86	8.64	14.35
						36.27	FL.PL.-10 X 4 X 5/8	249.16	3.63	6.87	15.80
						38.38	FL.PL.-11 X 4 X 9/16	292.44	3.88	7.62	15.59
16 50	341 66	3.66	8 84	[-12 X 3 45 X 30.9#	38 65	39.72	FL.PL.-12 X 4 X 1/2	334.01	4.09	8.41	15.25
17 10	353 50	3 76	8 74	[-12 X 3 5 X 32.9#	40.45	41.53	FL PL.-11 X 4 X 5/8	309.79	4.04	7.46	16.42
						43.43	FL.PL.-12 X 4 X 9/16	356.99	4.28	8.22	16.15
						44.52	FL.PL.-13 X 4 X 1/2	401.59	4.48	9.02	15.75
16 80	426 69	3 99	9.51	[-13 X 4 X 31.8#	44.87	47.00	FL.PL.-12 X 4 X 5/8	378.39	4.45	8.05	17.04
						48.74	FL.PL.-13 X 4 X 9/16	429.36	4.69	8.81	16.71
						49.57	FL.PL.-14 X 4 X 1/2	476.84	4.88	9.62	16.25
17 40	568 96	4 66	10.84	[-15 X 3.4 X 33.9#	52.49	52.74	FL.PL.-13 X 4 X 5/8	455.18	4.87	8.63	17.66
						54.30	FL.PL.-14 X 4 X 9/16	509.85	5.11	9.39	17.27
						54.83	FL.PL.-15 X 4 X 1/2	559.80	5.29	10.21	16.75
19.20	620 81	4.97	10.53	[-15 X 3.52 X 40.0#	58.96	58.70	FL.PL.-14 X 4 X 5/8	540.64	5.29	9.21	18.28

EQUIVALENT WELDED SECTIONS



RIVETED SECTIONS
30t (16.875") PLATING INCLUDED IN SECT.
.56" PLATING

16.875" x .56" PL. = 9.49 SQ. IN.



EQUIVALENT WELDED SECTIONS
30t (16.875") PLATING INCLUDED IN SECT.
.56" PLATING

16.875" x .56" PL. = 9.49 SQ. IN.

TOTAL AREA	MOMENT OF INERTIA	X	X1	RIVETED SECTION	SECTION MODULUS	SECTION MODULUS	EQUIVALENT WELDED SECTION	MOMENT OF INERTIA	X	X1	TOTAL AREA
14.92	115.14	1.84	6.72	[-8 x 2.97 x 18.7#	17.13	17.27	L-7 x 4 x 7/16	98.09	1.88	5.68	14.12
15.12	117.77	1.87	6.69	[-8 x 3.0 x 19.3#	17.60	19.19	L-7 x 4 x 1/2	106.53	2.01	5.55	14.74
15.32	120.17	1.91	6.65	[-8 x 3.02 x 20.0#	18.07						
15.72	130.12	1.98	6.58	[-8 x 3.45 x 21.4#	19.77	20.71	L-8 x 4 x 7/16	132.12	2.18	6.38	14.55
16.12	134.82	2.04	6.52	[-8 x 3.5 x 22.8#	20.68	21.11	L-7 x 4 x 9/16	114.63	2.13	5.43	15.37
						22.92	L-7 x 4 x 5/8	121.93	2.24	5.32	15.98
						23.02	L-8 x 4 x 1/2	143.65	2.32	6.24	15.24
16.45	176.06	2.30	7.26	[-9 x 3.45 x 23.9#	24.25	24.37	FL. PL.-9 x 4 x 7/16	172.31	2.49	7.07	15.02
15.87	204.97	2.40	8.16	[-10 x 3.45 x 21.9#	25.12	25.34	L-8 x 4 x 9/16	154.56	2.46	6.10	15.92
16.90	182.35	2.38	7.18	[-9 x 3.50 x 25.4#	25.40						
16.37	212.99	2.50	8.06	[-10 x 3.50 x 23.6#	26.43	27.13	FL. PL.-9 x 4 x 1/2	187.47	2.65	6.91	15.74
						27.44	L-8 x 4 x 5/8	164.08	2.58	5.98	16.60
16.72	223.02	2.56	8.00	[-10 x 3.4 x 24.9#	27.88	28.29	FL. PL.-10 x 4 x 7/16	219.50	2.80	7.76	15.46
17.82	202.22	2.51	7.05	[-9 x 4 x 28.6#	28.68	29.72	FL. PL.-9 x 4 x 9/16	200.91	2.80	6.76	16.46
17.22	231.50	2.65	7.91	[-10 x 3.45 x 26.6#	29.27						
17.72	239.76	2.73	7.83	[-10 x 3.5 x 28.3#	30.62	31.38	FL. PL.-10 x 4 x 1/2	238.21	2.97	7.59	16.24
17.80	248.98	2.74	7.82	[-10 x 3.95 x 28.5#	31.84	32.17	FL. PL.-9 x 4 x 5/8	213.28	2.93	6.63	17.17
						32.38	FL. PL.-11 x 4 x 7/16	272.98	3.13	8.43	15.90
18.30	257.07	2.82	7.74	[-10 x 4 x 30.2#	33.21	34.46	FL. PL.-10 x 4 x 9/16	255.32	3.15	7.41	17.02
						35.98	FL. PL.-11 x 4 x 1/2	296.14	3.33	8.23	16.74
						36.70	FL. PL.-12 x 4 x 7/16	333.63	3.47	9.09	16.34
						37.14	FL. PL.-10 x 4 x 5/8	271.11	3.26	7.30	17.79
18.49	363.96	3.34	9.22	[-12 x 3.45 x 30.9#	39.48	39.43	FL. PL.-11 x 4 x 9/16	317.43	3.51	8.05	17.58
						40.79	FL. PL.-12 x 4 x 1/2	361.81	3.69	8.87	17.24
19.09	377.22	3.44	9.12	[-12 x 3.5 x 32.9#	41.36	42.73	FL.-PL.-11 x 4 x 5/8	337.15	3.67	7.89	18.41
						44.68	FL. PL.-12 x 4 x 9/16	387.81	3.88	8.68	18.14
18.79	453.45	3.64	9.92	[-13 x 4 x 31.8#	45.71	45.78	FL. PL.-13 x 4 x 1/2	435.35	4.05	9.51	17.74
						48.40	FL. PL.-12 x 4 x 5/8	411.91	4.05	8.51	19.03
						50.18	FL. PL.-13 x 4 x 9/16	466.64	4.26	9.30	18.70
						51.00	FL. PL.-14 x 4 x 1/2	517.18	4.42	10.14	18.24
19.39	605.91	4.25	11.31	[-15 x 3.4 x 33.9#	53.57	54.41	FL. PL.-13 x 4 x 5/8	495.70	4.45	9.11	19.65
						55.87	FL. PL.-14 x 4 x 9/16	554.22	4.64	9.92	19.26
						56.25	FL. PL.-15 x 4 x 1/2	602.40	4.79	10.71	18.74
21.19	663.46	4.58	10.98	[-15 x 3.52 x 40.0#	60.42	60.58	FL. PL.-14 x 4 x 5/8	588.84	4.84	9.72	20.27
						61.97	FL. PL.-15 x 4 x 9/16	651.89	5.04	10.52	19.82
22.66	707.78	4.80	10.76	[15 x 3.62 x 45.0#	65.78	67.09	FL. PL.-15 x 4 x 5/8	691.75	5.25	10.31	20.89
						68.05	FL. PL.-16 x 4 x 9/16	757.36	5.43	11.13	20.38
						73.83	FL. PL.-16 x 4 x 5/8	804.70	5.66	10.90	21.51
						75.78	FL. PL.-16 x 5 x 9/16	821.48	5.72	10.84	20.94
21.97	1013.42	5.55	13.01	[-18 x 3.95 x 42.7#	77.90	82.46	FL. PL.-16 x 5 x 5/8	872.39	5.98	10.58	22.16

CHINESE TRAINEE at General Electric Co. testing coils on the rotor of a large marine propulsion motor.

War Research and Engineering

by ***R. C. Muir***

Vice President in Charge of Engineering,
General Electric Co.

RESEARCH AND developmental engineering must proceed today without the usual analysis of whether or not they will pay out in the usual business sense.

The engineer has the responsibility of giving our fighting forces equipment technically superior to that of the enemy, and this needs closer cooperation between research, engineering, and manufacturing.

There must be an overlapping of these three functions, so that the new things developed through research and engineering may be incorporated without delay in the products leaving our factories. The engineer must ever bear in mind the conservation of materials, man hours and machine hours. It is increasingly important that the designs of machines and equipment for the most difficult jobs be so simple that they can be manufactured readily and in sufficient quantities without bogging down our production facilities.

All branches of electrical engineering have been affected by the increased tempo of war production. Ordnance control is an example of one of the things that has suddenly thrust a wide variety of intricate problems on the electrical engineer.

There is not only a shift of effort here, but in addition the development of a kind of engineering with which but few were familiar—electric machines and circuits coordinated with highly complex mechanical mechanisms, optical systems, and radio.

The problems of electrical engineering for aircraft, for instance, can only be solved by an attempt to provide the airplane with all the operating and armament devices required for a battleship. The same equipment is needed, but it must be extremely light in weight, designed to withstand severe vibration, and to operate from sea level to high altitudes under widely varying humidity and temperature conditions.

Requirements for warships have shifted much engineering effort to automatic controls, shockproof mounting, mine protection, remote-controlled equipments, and radio communication, signaling and detection.

In the present war, radio in all of its branches has become an essential part of every military or naval operation. During the past 20 years, a vast fund of knowledge has been accumulated in the electronics field: frequency modulation, television, and high-frequency phenomena. New tubes and circuits have come into being rapidly and have made these things possible, but, up to the present war period, we have only been playing with them, relatively.

The fundamental work of those 20 years, however, has prepared the engineering profession for the present emergency.

For example, we have been becoming more noise conscious for several years, and what we have learned about noise prevention is of great importance in electric equipment for submarine and other naval and army applications.

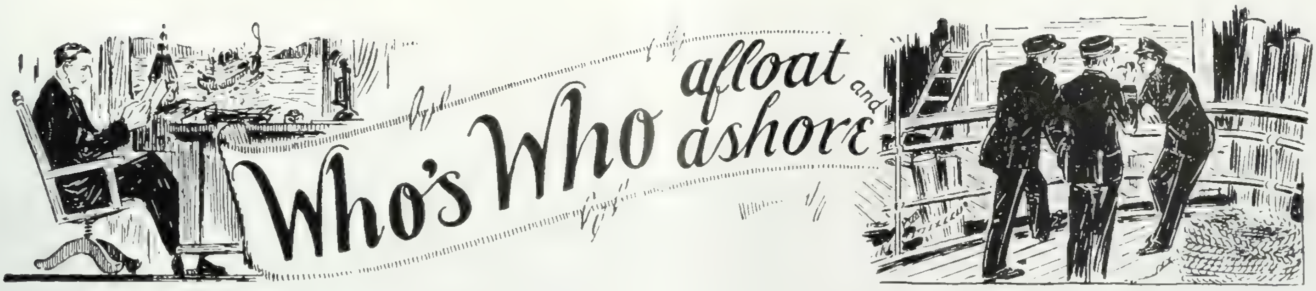
We have been learning more and more about heat transfer, and this knowledge is extremely valuable in the design and installation of most all engineering products for war purposes.

Metallurgy and chemistry have given us a number of materials with properties greatly superior for our purposes to those formerly available. Accelerated work on measurement instruments and methods are also of great value.

Already there are many developments which will have peacetime application, but it is too early to prophesy in any great detail.

Ships, airplanes, tanks, searchlights, guns, and other implements of war require control which must coordinate to a high degree of accuracy the motions, directions, or indications of two or more devices which are separated by some distance. The post-war period should provide great possibilities for this type of control in manufacturing and in transportation.

Abstract of an address before the Northeastern District Meeting, A. I. E. E., Schenectady.



Who's Who afloat and ashore

Edited by Jerry E. Scanlon

New Director Army & Navy Club

Captain Paul Williamson, U.S.A., (Ret.), is the new managing director of the Army & Navy Club, it was announced by Walter J. Walsh, president.

The selection of Captain Williamson followed a meeting of the board of directors to fill the vacancy made by the recent passing of Captain Lewis Mesherry.

A lengthy and meritorious career in the Army is the background of Captain Williamson, with overseas duty flanked by an experienced service record in various Army posts of the country.

A large acquaintance with the Navy officer's personnel is also the happy lot of Captain Williamson. The result has been despite his short tenure as managing director of the Army & Navy Club; he is rapidly becoming known to hundreds of additional officers of all branches of the service.

The careful supervision of the board of management and Captain Williamson's fealty to duty in his new office over the guest list and membership is resulting in ever-increasing popularity of the club as a social and meeting headquarters for all officers in service.

Foreign Freight Forwarders, Inc.

On August 3, a San Francisco office was opened to take over the forwarding of Lend-Lease shipments to Great Britain, hitherto a function of the British Ministry of War Transport, it was announced.

San Francisco Foreign Freight Forwarders, Inc., is the name of the new agency which is composed of San Francisco freight forwarding representatives and which was set up under terms of the Bland Forwarding Bill. The new agency is a private enterprise and will operate under contract with the War Shipping Administration.

Heading the organization as president is **M. J. McCarthy,** partner in the firm of Berry and McCarthy, ocean freight forwarders. Other officers are **J. E. Lowden,** ocean freight forwarder, vice president; **H. W. Farrell,** ocean freight forwarder, secretary; **A. J. Hayes,** ocean freight forwarder, treasurer; **W. C. Auger,** Harper Robinson Company, chief clerk.

The Bland Bill, passed unanimously by both houses of Congress, was designed to return to experienced American freight forwarders the business of developing from the Lend-Lease shipment of the varied items needed by Great Britain. Among the leaders in the fight for the bill's passage was the San Francisco Chamber of Commerce which sponsored hearings on the matter.

J. F. McNamara Chairman of Harvill

James F. McNamara, mill products sales manager of The International Nickel Company and director of the Lukens Steel Company, has been made chairman of the board of directors of Harvill Aircraft Diecasting Corporation.

Mr. McNamara has spent practically all of his life in the metal business. He received his early training in the manufacturing end of builders' hardware at the plant of Yale and Towne Manufacturing Company, Stamford, Conn. Specialty selling has been his task since 1907. He joined The International Nickel Company as a salesman 31 years ago—later becoming vice president and general manager of the Monel Metal Products Corporation. During all of this period the sale of Monel and other special alloys of The International Nickel Company has been under his direction.

CAPTAIN PAUL WILLIAMSON (right), recently selected as Managing Director, Army & Navy Club of San Francisco, is congratulated by Walter Walsh, President.

New P. C. Director for WSA

Admiral Emory S. Land, War Shipping Administrator, announced July 7 appointment of **A. R. Lintner** as Pacific Coast Director of the War Shipping Administration.

Mr. Lintner has been Acting Pacific Coast Director in place of **J. E. Cushing,** who was called to Washington to become Assistant Deputy Administrator for Ship Operations. At the same time the WSA announced the appointment of **E. J. Bradley** as Assistant Pacific Coast Director.

Mr. Lintner was previously Pacific Northwest representative at Seattle. Mr. Bradley was formerly representative of the WSA at San Francisco.

LT.-COMDR. PAUL CRONK
Captain of the Port of San Francisco

Port of San Francisco

While the accomplishments of two Navy officials in the discharge of their duties as Captain of the Port and Security Port Officer, must, of military necessity, remain unheralded for the duration, a short biography of these two officials is not amiss.

First we present **Lieutenant-Commander Paul Cronk,** Captain of the Port. A veteran of the U. S. Coast Guard in point of service, with experience ranging up and down all ports of the United States including the Gulf, this quiet and unassuming executive has won the confidence and cooperation of all who have had business with his office.

Upon Lieutenant-Commander Cronk rests the duty of protection of the port, guarding against sabotage of tonnage at anchor, aweigh or at dock, and of piers and buildings on the waterfronts.

He is responsible for the loading and discharge of all vessels, and for the issuance of all identification permits to the thousands engaged in duties along the 'Front.

His efficient and courteous manner in handling scores of difficult problems each day has won for him the approbation of his superiors and commendation of the shipping fraternity.

Right in line behind Lieutenant-Commander Cronk is his "right-hand" man, **Lieutenant-Commander Frank W. Leahy,** born, reared and educated in San Francisco, an alumnus of the University of Santa Clara.

Right after college, Frank Leahy joined the Boston Engineering Company to serve his machinst apprenticeship. This completed, he went to sea on his first voyage as a cadet on the old *Admiral Farragut.*

Up the hard way in those days, Frank Leahy won his Chief Engineer's ticket, and in World War I was in the Navy as engineer officer and later was chief inspector of machinery for the United States Shipping Board.

After a short spell in business he joined the Bureau of Marine Inspection and Navigation at New Orleans as Principal Traveling Inspector.

He came back home last March, loaned to the Coast Guard by the Bureau of Marine Inspection. Late in July, he was inducted into the United States Navy with the rank he now holds and with the title of Security Port Officer.

Lieutenant-Commander Leahy lives atop of Nob Hill with his charming wife and a son, Frank W., Jr.

Lieutenant-Commanders Cronk and Leahy are welcome additions to the efficient and respected corps of officers and personnel that are charged with the important duties of handling the affairs of the Port of San Francisco under the direction of Admiral John W. Greenslade, Commandant of the Twelfth Naval District.

LT.-COMDR. FRANK W. LEAHY
Security Officer, Port of San Francisco

ROBERT W. HINCKLEY
Assistant to President, Sperry Gyro

Assistant to President Sperry Corporation

On July 7, **Thomas A. Morgan,** president of the Sperry Corporation, announced the appointment of **Robert H. Hinckley,** former Assistant Secretary of Commerce for Air, as assistant to the president. Mr. Hinckley will give his attention for the immediate future to the aviation activities of the Corporation.

Mr. Hinckley is particularly well qualified to make a real contribution to the aeronautical activities of the corporation by reason of his years of experience. He was the originator of the Civilian Pilot Training Program while he was chairman of the Civil Aeronautics Authority, and due to his foresight the nation built up a reservoir of skilled pilots to fly American war planes long before this country was plunged into war. As a result of his efforts, there are now 105,000 CAA licensed pilots. Mr. Hinckley has figured prominently in the news as a pioneer advocate of a broad national airport program.

Mr. Hinckley entered public service in 1918 as a member of the Utah State House of Representatives, and was Mayor of Mount Pleasant, Utah, from 1924-25. He was named a member of the Civil Aeronautics Authority upon its formation in 1938, and in 1940 became Assistant Secretary of Commerce for Air.

Pomona Pump Elects Treasurer

C. Granniss Bonner, formerly comptroller and more recently treasurer of The Brunswick-Balke-Collender Company of Chicago, has been elected treasurer of Pomona Pump Co., Pomona, California.

Bonner relieves Donald C. McKenna, vice president and former treasurer, who will devote full time to the increasing production activities of the company's four manufacturing plants. Pomona Pump Co. is not only producing pumps for every direct and associated war effort, but also has undertaken a heavy schedule of marine engine and maritime fittings manufacture.

Bonner is 45, a graduate of Swarthmore College with A.B. and M.E. degrees, a Phi Delta Theta and a member of the Controllers Institute of America.

Foster-Wheeler Executives

Harry W. Parsons, assistant marine engineer for the Foster-Wheeler interests with headquarters in New York, made a quick trip to the West Coast late in July in company with **Joseph Nelis,** the concern's popular vice president.

Both were present to greet Rear Admiral Howard L. Vickery, Vice Chairman of the Maritime Commission, at the Propeller Club of the United States Port of San Francisco Bohemian Club reception and cocktail party to the Admiral.

New Officials at LASHIPCO

At the Los Angeles Shipbuilding and Dry Dock Corporation the new operating manager, Mr. Walter Barnett, has completed his reorganization of the shipyard executives and the yard operations are now functioning under the following departments and supervision:

(1) The operating manager's office, supervised by Mr. Barnett; (2) comptroller, E. R. Bearman; (3) secretary-treasurer, J. B. Ingoldsby; (4) plant protection, E. W. Brown; (5) production, H. O. Schuster; (6) technical department (chairman of committee composed of E. C. Obenheim, marine engineering; M. R. Rhodes, electrical engineering, and D. B. McFarland, naval architect); (7) purchasing department, R. H. Davis; (8) personnel department, R. E. Fatherree; (9) plant department, C. C. Kinne, and (10) repair department, Frank Cavanaugh.

Calship Breaks Records

On June 30 Calship hung up a 30-day record that tops them all. Fifteen Liberty ships delivered, eleven Liberty ships launched. A capacity of 150,000 dwt tons in steam cargo vessels delivered in one month from one yard is something to brag about. Read all about it in the illustrated article beginning on page 50 of this issue.

For The Duration

Warren D. Lamport, prominent in port circles of the Pacific Coast, is now stationed at Fort Mason on duty with the Army Transport Service with the rank of major. He surrendered his position as president of the California Association of Port Authorities. He is a veteran of World War I.

LT.-COL. B. C. ALLIN

Mr. Lamport was one-time vice president of the Long Beach Harbor Commission and director of the Pacific Coast Association of Port Authorities.

Joseph B. Eastman, director of the Office of Defense Transportation, appointed **Robert Elander**, formerly for years with the Luckenbach Steamship Company in Seattle, as supervisor of port facilities in the northern port.

B. C. Allin, associated with the Parr Terminal interests for the last four months, was recalled to service and is now attached to the Port Embarkation Office with the rank of lieutenant-colonel. He is on the staff of the commanding general in the office of Service and Supplies.

Lieutenant-Colonel Allin had been manager of the Port of Stockton for years before joining Fred Parr.

Lieutenant - Colonel Allin, before coming to California, was with the One Hundred and Eleventh Engineers in Texas. He has been identified with many of the largest U. S. engineering projects on the Pacific Coast, and has a host of friends both in the civilian and military life of the West Coast.

Joseph B. Eastman, chief of the Office of Defense Transportation, named **J. H. Anderson,** traffic manager of the River Lines, to direct the San Francisco coastwise and intercoastal carriers' advisory committee, a new unit.

In turn Anderson selected such well-known shipping men on his staff as **Norman A. Fay,** president of the River Lines; **Thomas Crowley,** president of the Crowley Launch & Tugboat Company; **W. G. Westman,** general manager of the Pioneer Lines; **C. F. Heath,** superintendent of the Southern Pacific Ferries; and **Byron L. Haviside,** vice president of the Haviside Company.

Duties of the organization will be to cooperate with the Office of Defense Transportation on port and shipping problems.

Alexander MacDonald, Los Angeles lawyer, was appointed July 10 as Deputy Regional Director of WPB at Los Angeles by **Harry H. Fair,** Director of WPB Region 10. He will assume direction of all WPB activities in the Los Angeles area.

Captain D. J. McCarthy, well-known in marine circles along the Pacific Coast, is now in charge of the port terminals on the Columbia River district for the Office of Defense Transportation. His duties as supervisor include developing the export tonnage of Columbia River ports.

E. J. "Bud" Judge, who served with W. R. Grace & Co. and the Grace Line for nearly a quarter of a century until joining the Transport Service, has passed his qualifications and is now Lieutenant Judge, U. S. A. He is the son of the late Captain Bernard Judge, one of San Francisco's most colorful police officials and a brother of Elton Judge of the Standard Oil Company.

Shifts, Changes and Promotions

The following changes in vessels' command was reported by the Marine Exchange at press time:

Tanker *L. P. St. Clair,* **Charles Nelson,** vice **Frederick Ellison;** steamer *Cathwood,* **Otto Phillipson,** vice **Carl Sandberg;** tanker *Paul Shoup,* **Harold Pitts,** vice **R. W. Kelly;** steamer *Scotia,* **S. P. Frey,** vice **Henry Jenson;** steamer *Nevadan,* **Charles Hansen,** vice **E. G. Sutton;** tanker *W. S. Rheem,* **Charles Baker,** vice **Robert Melbye.**

Captain Robert B. Fox, who was chief officer on the S. S. *Flying Cloud,* was appointed master of the steamer *Abraham Clark.* Other appointments to this new vessel included John I. Thomsen as chief officer; Harold E. Sholl as second officer.

Captain Hans A. Johansen is now in command of the steamer *George Matthews.* He had been shore-side at his home in San Pedro on leave. The *George Matthews* is another new vessel from the yards of the California Shipbuilding Corporation, Los Angeles.

Harry L. Anderson, who was first assistant on the *West Celeron,* was named chief of the *George Matthews;* **Armstead Earl Wion** was named first assistant; **Gerald Hawes** is the third.

Richard Nilsen is the second assistant engineer on the *George Matthews,* and **Emile Waldtenfel** is holding down the third mate's berth.

Captain Karl J. Staus, formerly chief officer on the steamer *Siletz,* has been named master of the new steamer *William P. McArthur.* **Erik G. Carlson** is the chief officer and **Donald Nelson Kefoid** is the third officer.

Chief engineer of the ship is **Charles Collins McGlyan,** and **Leonard Lee Gregory** is third assistant engineer.

William Fulton has been appointed Los Angeles district manager for the Isthmian Line. For eighteen years, he had been associated with Norton, Lilly & Co., the last eight in the capacity of traffic manager.

Friends and business acquaintances of **Al Norton,** formerly with Arrow Line, will be pleased to learn he is now affiliated with the Pacific-Atlantic Shippers Association as traffic representative.

John Ott, who was associated with George E. Billings & Sons, is now directing the Marine Insurance Department of E. C. Evans & Sons.

OUR ILLUSTRATION DEPICTS four gentlemen in the sartorial splendor of "Ye Olden Days" in the halcyon era of the glamorous 1915 Panama Pacific Exposition. These are back row left to right: George Williams, assistant operating manager for the Grace Line; George Eggers, now an executive with the Maritime Commission; lower (left) George H. "Slim" Edwards, one-time Grace Line, Mexican Line and Pacific Mail skipper; and S. F. "Salvador Sam" Casey, one of the oldest members of the Grace Line, now attached to their freight handling staff.

Ernest Laidlaw, Jr., son of the former traffic manager for Swayne & Hoyt, is back in San Francisco after thrilling adventures and narrow escapes during the Japanese invasion of Burma. He made his way to India and thence home by a circuitous route.

Jules V. Holder replaced Carl Bootes as chief steward on the steamer *Abraham Clark* while in San Francisco early this month.

First assistant engineer of the new S. S. *William P. McArthur* is **ChristoPher Josiah Browe;** the second is **George Henry Connell;** and **Frank Clayton Waters** was assigned as second officer. All are well known in Pacific marine circles.

Captain Charles Moritz was transferred from command of the S. S. *Siletz* to the steamer *George Abernathy.* This vessel is a brand new ship built by the Oregon Shipbuilding Corporation. **Captain Patrick H. Gallagher** succeeded to the command of the *Siletz.* Captain Gallagher was shore-side for six weeks due to injuries suffered to his right arm when struck by an automobile, while his vessel was in Seattle.

John B. Pugh is now chief engineer of the steamer *George Abernathy.* **Frank Coleman** is first assistant engineer; **David E. Drenson** is the second and **Edward B. Berryman** is third assistant.

George E. Howard is the chief officer; **George S. Schmitt** the second officer, and **Francis A. Fillipow** the third officer.

Ray H. Johnson, second officer on the steamer *Siletz* is shore-side and his place is taken by **Arvid R. Johnson. Louis Zwanck** is on vacation from the same ship as third mate, and his place is taken by **Jack Logan Zenor.**

Harry Jensen who was in command of the *West Celeron* and then shore-side for a vacation is now skipper of the *Pacific Oak.*

Frank G. Rood left the ship as chief steward and was succeeded by **Russell Wilbur Ryvers.**

(Page 88, please)

Necrology

Pacific Coast Skipper Passes

A short period after the passing of Mrs. Gaidsick, Captain C. T. Gaidsick, widely-known coastwise and offshore skipper, died of injuries sustained in his home, early last month.

Identified with various steamship companies for years as mate and commander, Captain Gaidsick came from a long line of seafaring folk.

Captain Gaidsick is best remembered during the time he was chief officer aboard the liner *H. F. Alexander*.

International Coffee Expert

WILLIAM ROBERT PHILLIPS

William Robert Phillips, 49, submanager of W. R. Grace & Co., and one of the foremost experts in the world on coffee, died suddenly on July 3 at his Hillsborough, California home.

A native of Baton Rouge, La., Mr. Phillips had been located in the Grace offices in San Francisco since 1932. He had been with the company since 1914, remaining continuously in the company's service with the exception of World War I, when he served as a captain in the artillery corps overseas.

Funeral services were held in Baton Rouge. He is survived by his widow, two sons, William Robert, Jr., and James.

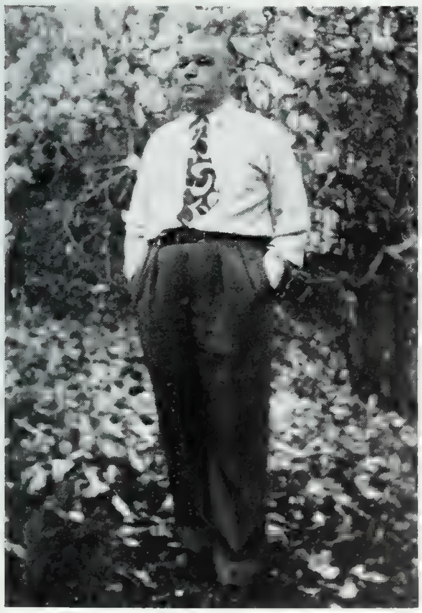
Shipping Leader

Howell Tyson Lykes, co-founder of Lykes Brothers, Inc., operators of one of the largest fleets of American merchant vessels in international trade, passed away July 9 at his home in Tampa, Florida.

A Mother of Shipping

Mrs. Eusebia Bailey, mother of Frazer A. Bailey, vice president of Matson Navigation Company, passed away early in July at St. Luke's Hospital, San Francisco, after a brief illness. Mrs. Bailey had maintained residence in San Francisco for 30 years. Her son is the sole survivor.

"Billy" Ward Gone



WILLIAM DOUGLAS WARD

The many Pacific Coast friends of **William Douglas Ward** were shocked and grieved at the news of his death in Polyclinic Hospital, New York, on June 15, after a very brief illness.

"Billy" Ward, age 63, for the past few years was vice president and sales manager of Heat Transfer Products, Inc., of New York City.

He has held executive positions in many notable manufacturing firms, including: The Pelton Water Wheel Co., San Francisco; the De La Vergne Engine Co. of Philadelphia, and the William Cramp and Sons Ship and Engine Building Company of Philadelphia.

Mr. Ward was a Canadian by birth, but came early to the United States and received his college education at Leland Stanford University, Palo Alto, California.

He was an active member of the Propeller Club of the United States, Port of New York, and a member of the Masonic fraternity.

Grace V. P. Passes in Chile

Louis Valverde, former vice president of W. R. Grace & Co., died June 24 in Santiago, Chile, after an illness of almost two years.

Mr. Valverde was born in Ecuador June 12, 1876, but spent the greater part of his life in Chile. He entered the employ of W. R. Grace & Co. in Valparaiso in May, 1897, and in the year 1937 received the organization's gold medal commemorating forty years of service.

Mr. Valverde resided in the Argentine for several years and in New York for about ten years—from 1921 to 1931—during which period he was in charge of all of the export activities of W. R. Grace & Co.

In 1927 Mr. Valverde was elected vice president of W. R. Grace & Co., which post he retained until he retired to an advisory capacity in Chile at the end of 1939.

Pacific Coast Manager

F. A. Calmus, Pacific Coast manager of the Elliott Company of Jeannette, Pa., passed away August 2 at St. Francis Hospital, San Francisco, of heart trouble.

He was very popular with the marine and heavy industry fields and will be much missed among shipyard executives.

News FROM THE PACIFIC NORTHWEST

by Daniel L. Pratt

Oregon Gets Gold Star

On July 19 the Oregon Shipbuilding Corporation launched S. S. *Harvey W. Scott,* its fifty-third ship, and delivered S. S. *Jesse Applegate,* its fiftieth ship. Sponsor for the *Harvey W. Scott* was Mrs. W. A. Weber, wife of the assistant to Rear Admiral Howard L. Vickery, Vice Chairman, U. S. Maritime Commission.

On this occasion Rear Admiral Vickery presented "Oregonship" with a two-star Maritime Commission Merit "M" burgee. The "M" flag, with one star, was presented to "Oregonship" on April 27.

This eleven-way yard is now scheduled to deliver one ship per month per way for the duration. Given the materials and the equipment, there is no doubt that "Oregonship" will deliver the ships.

MISS SATTERLY sponsors U. S. Destroyer Satterly at Seattle-Tacoma Yard No. 2.

Lamont Offers to Get Steel for Bridge

R. J. Lamont, head of the Seattle-Tacoma Shipbuilding Corp., and Todd Drydocks, both companies having plants on Harbor Island, Seattle, has promised to secure from an undisclosed source the steel necessary to complete the new Spokane Avenue viaduct, which carries traffic to Harbor Island, across the main and most congested manufacturing and railroad center in Seattle. Plans for completion of the bridge, which is already under way, have been held up on account of steel, and it is hoped through Lamont's efforts enough of the critical metal can be procured to finish the essential parts, as three shipyards and many other important industries are located on the island.

Seattle's Naval Armory Dedicated

Seattle's new Naval Armory was dedicated July 4 with the solemn promise that the war will be fought until victory is won. The Armory was constructed by the Works Projects Administration on property dedicated by the City of Seattle. Thousands of young men who are urgently needed by the Navy will receive their first training there. Following the sounding of "Attention" by a bugler and the invocation by Chaplain J. F. Dreith, U.S.N., Mrs. Peter Barber, who lost three sons at Pearl Harbor, was introduced by Lieut. Commander Darwin Meisnest, master of ceremonies. Gov. Arthur B. Langlie, Mayor Wm. F. Devin and Rex L. Nicholson, WPA administrator, each spoke briefly. The Armory was accepted on behalf of the Navy by Admiral C. S. Freeman, head of the 13th Naval District, who ordered the Flag to be raised while the band played *"The Star Spangled Banner."*

Canadian Yard Reports New Record

Late in June a West Coast Canadian shipyard reported it had set what was believed to be a new record in launching a 10,000-ton riveted steamer just 77 days after the keel was laid. Previous record at the yard was 85 days. Plant officials who built the "Fort Pitt" believe that only welded ships have made a faster record.

New Anacortes Shipyard

Martin Martinsen, in the boat building business for many years under the name of the Martin Boat Co., now 70 years old, is going into shipbuilding in Anacortes on his own hook in a big way, utilizing a 22-acre site with three covered ways on Guemes Channel. Officers of the new company are: Mr. Martinsen, president; Dave J. Grant, treasurer; Joseph O. Donnell, vice president, and Harold M. Troy, secretary. Harold Lee and Associates, Seattle naval architects, are preparing plans for the yard. R. H. Mahoney, formerly head of Textile Products of Seattle, is vice president and general manager, with offices in the Textile Tower. The shipyard will engage principally in building wooden auxiliary ships for the Navy.

Peabody Heads New Sailing Ship Firm

Capt. Alexander M. Peabody, president of the Puget Sound Navigation Co., has been elected president of the Inter-American Navigation Corporation, which will purchase and build wooden sailing ships for Western Hemisphere trade. Organization of the new concern was announced by Nelson A. Rockefeller, coordinator of Inter-American affairs in Washington, D. C. Sailing vessels will be built in other American republics from loans up to $10,000,000 supplied by the Reconstruction Finance Corporation. The new shipping company is incorporated under the laws of Maryland. Capt. Peabody's great-great-grandfather organized the Black Ball line in 1817, operating in the transoceanic trade, and, although his present business is the operation on Puget Sound of ferry-boats, probably the largest and fastest in the world, he comes by his deep-seagoing instincts through a long line of ancestors, and knows shipping and navigation. This new fleet of several hundred wooden sailing ships of 300 tons each will be built for the Inter-American trade, carrying essential food products and other needed war commodities.

Another Seaplane Launched

It was the wife of **Commander Thomas Gray,** inspector at the Boeing Airplane Company, to whom was awarded the honor of christening the new seaplane tender at the ways of the Lake Washington Shipyards, Houghton, Wash., on June 13. Standing beside Mrs. Gray when the bottle was broken was **Mrs. Ralph C. Thompson,** 21-year-old wife of a shipfitter's helper at the yard. A drawing had been held among the employees spending more than 10 per cent of their wages at the yard for war bonds and Mr. Thompson had won, so his wife was co-sponsor with Mrs. Gray. The seaplane tender has been named *Half Moon.*

U.S.S. Oregon May Be Carrier

A plan is in effect for the conversion of the old battleship *Oregon,* which since her retirement a number of years ago has been used as a floating museum of war relics, into an airplane carrier. She has been offered by the War Industry Board not only to save her from the scrapheap but also to get any use out of the vessel as she is, if any. The conversion offer came after a recent survey of the old "Bulldog of the Navy" showed she contained some of the finest steel that had ever been milled, as well as other good structural features. It is believed that the work could be done right in Portland. The width of 68 feet is satisfactory. The hull would be left intact. Engines and boilers would have to be rehabilitated.

One Launched Four Keels Laid

The $12,500,000 cruiser-mine-layer *Ozark* had barely hit the water at the plant of the Willamette Iron & Steel Co. at Portland June 15 when the keels were immediately laid for four 180-foot mine sweepers which the company has under contract. The 450-foot Ozark, sister ship of the U.S.S. *Catskill,* launched recently, had been under construction since June 12, 1941. She was christened by Mrs. A. J. Byrholt of Seattle, wife of the 13th Naval District Procurement Director, who gave the keynote address.

Swan Island Keel Laid

Shipbuilding got its start at the new $15,000,000 Swan Island Kaiser plant about the middle of June, two weeks ahead of schedule. The eight-way yard is only two-thirds complete, and the first keel was scheduled to be laid about July 1. First launching of the 70 tankers under contract is due in December.

Marine Shorts

The Union Oil Co. and the General Petroleum Co., both operating independently, have closed plans for extensive addition to tank and storage facilities in Bremerton. Union Oil has purchased property at the foot of Snyder Avenue. General Petroleum bought a half acre of waterfront on Pennsylvania and will clear property for gas facilities and dockage. . . The Ultican Barge Co. in Cosmopolis, Wash., is setting a new record for rapid barge construction. It launched its first barge in a month. The entire contract is for nine barges, 90 x 32, and the Ultican expects to make such good time on the entire job that the Government will assign the company new work. . . An acute man-power shortage in the Portland shipyards is expected.

Dwight Hill, one-time manager in Portland for Burchard & Fisken, and **Capt. Fred L. Nystrom,** Seattle mariner, are among Americans to be exchanged at Lourenco Marquese, Portuguese East Africa. Both Hill and Nystrum were in Hong Kong when the Japs captured that city. . . Transfer of ownership in the Tacoma Marine & Hardware Co. from its long-time owner, **Percival A. Dovey,** has been made to a group of new owners. Men taking over the store are **Lewis P. Boen,** largest stockholder and manager, **Martin Petrich, Joe Martinac, Arne Strom, A. Dahl** and **Reuben Carlson.**

THE 2-STAR "M" FLAG for Oregonship, July 19.

AT OREGONSHIP Henry J. Kaiser makes his famous pronouncement on turning shipyards into cargo-plane production.

News FROM THE PACIFIC SOUTHWEST

by K. M. Walker

Faith and Confidence

AT THE LAUNCHING of S. S. *Mormactern* on July 2 in the Wilmington yard of the Consolidated Steel Corporation, President A. V. Moore outlined the future aims and prospects of his firm as follows:

I am most happy to be present on the occasion of the launching of the *Mormactern,* the sixth ship of this group being constructed in this splendid yard for the account of the Moore-McCormack Lines. These six vessels ultimately will operate in our American Scantic Line service to Scandinavia and Baltic ports, including Leningrad as well as to the Russian ports to the north, Murmansk and Archangel, all these ports being named in our trade route agreement covering this Scantic service. I might here add that this is the thirty-sixth new steamer constructed for the account of our company since 1939, and that we have six more under construction at the yards of the Federal Shipbuilding Company at Port Newark, New Jersey; therefore a total new ship program of 42, of which there were four passenger ships. Many of these new ships were taken over by our Navy and we were repaid our cost less depreciation.

All these new vessels are now in various governmental war services, and I am happy to say, doing great work. Seven of them have been converted into airplane carriers. Having therefore, to a certain extent, been able to contribute these up-to-date, fast vessels to the war service pleases us very much. Without doubt these six Consolidated new buildings and our six buildings at Port Newark will also go into war service, but, ladies and gentlemen, we are looking to the future when this war is finally over, when these new ships will permit our organization to maintain our Pacific Republics Line service to and from the East Coast of South America on an even greater scale than was our good fortune in 1941, and at this time I want to take the opportunity to thank all you shippers who have supported us so well since we began our operations on the Pacific Coast.

Propeller Club Elects Officers

Late in July, the Propeller Club, Port of Los Angeles, elected as president **EdgarW. Wilson,** general agent, American President Lines. Other officers elected were:

J. D. Baker, Panama Pacific Line, first vice president; **James L. Adams,** Lillick, Geary, McHose and Adams, attorneys, second vice president; **Charles H. Bayly,** Crescent Wharf and Warehouse Co., third vice president; and **J. B. Hurd,** Matson Navigation Co., secretary-treasurer.

Named to the board of directors were:

Edgar M. Wilson, American President Line; **Arthur Eldridge,** L. A. Harbor Department; **Perry S. Newcomb,** Barber Steamship Lines, Inc.; **Leonard T. Backus,** Firemen's Fund Ind. Co.; **Daniel Dobler,** The Texas Co.; **R. W. Gerhart,** California Shipbuilding Corp.; **Ralph J. Chandler,** Matson Navigation Co.; and **Fred A. Hooper,** American-Hawaiian Steamship Co.

Fulton Head of Isthmian

The Isthmian Steamship Company opened an office in the Associated Realty Building, Los Angeles, early in July. Named in charge of this office is **William Fulton,** for the past 14 years with Norton, Lilly & Company at Los Angeles as traffic manager.

Mr. Fulton is widely known and liked among the shipping fraternity of the Pacific Coast.

Bureau M. I. and N. Promotions

When the general orders shifting the Bureau of Marine Inspection and Navigation from the Department of Commerce to the Coast Guard was made, it brought promotion to two well-known officials in the Los Angeles Harbor district. **Captain Edward Stuart** and **Joseph Moody,** heretofore Los Angeles inspectors of hulls and boilers, were elevated to Navy-Coast Guard District Supervising Marine Inspector and Senior Marine Inspector in charge of personnel, respectively.

The offices and staff of Stuart and Moody are being moved from Los Angeles Harbor to the Times Building, Long Beach. A. L. Woodruff and his staff continues at the Federal Building, San Pedro.

Port Supervisor For ODT

In charge of the post of Port Supervisor for the Office of Defense Transportation in Los Angeles Harbor is **Morgan Huntoon,** for many years one of the leading executives of the steamship business in Southern California.

Mr. Huntoon has had a wide experience in marine business. He was district manager for the Garland Steamship Corporation; was associated with Zac T. George in the Pacific Coast management of the Intercoastal Steamship Freight Association; and was also

Los Angeles manager for the Calmar Steamship Corporation and for Swayne & Hoyt.

Concrete Shipyards Busy

The Maritime Commission has shown evidence of faith in the concrete ship as apparent in the recent letting of contracts to increase the number of ships allocated to existing yards and to new yards to be built for this purpose. **The Concrete Ship Constructors** of National City, California, have been awarded a contract for 17 additional oil tank barges, bringing the total building or to be built at this yard to 22 ships.

The concrete shipyards at Savannah, Georgia, and Galveston, Texas, have been granted similar boosts in the number of vessels contracted for, and all of which will be oil tank barges.

One June 11, the Maritime Commission announced that contracts had been let to **McCloskey & Company** of Philadelphia for 24 concrete single-screw, steam-propelled cargo ships of 5200 deadweight tons.

Word now comes that two yards are to be built in South San Francisco and possibly one at Portland, Oregon, to fulfill contracts with the Maritime Commission for concrete vessels. The exact number of vessels to be built at the proposed yards has not yet been released, but it would appear that the Maritime Commission will have well over a hundred of these unusual vessels under construction.

Intensive study and exhaustive tests covering months of time, as concrete must take a natural set and the final results cannot be known in some instances for months, have resulted in the selection of materials and types of design most adapted to the stresses and strains to be encountered in the various parts of the hull. It is plain that the concrete ships of today are thoroughly engineered, and neither time nor expense has been spared in working out the best design.

The first of the concrete ships for the Maritime Commission will be launched at the Concrete Ship Constructors yard in National City during August, according to the present schedule. Numerous delays have been encountered in building this first concrete vessel as all the myriad problems of assembly, construction methods and means of handling the concrete during the pours had to be worked out as construction progressed. With this experience gained, the subsequent ships will be built in much less time than the first, but to National City will go the distinction of having produced the first concrete ship of World War II. During World War I, National City produced two concrete steamers for the old Shipping Board, and one of which ships is still afloat and operating as a fish reduction plant at San Francisco.

Navy Leases San Diego Pier

The San Diego Harbor Commission has granted the Navy an annual lease on the "B" Street Pier at a yearly rental of $53,000. This is retroactive to December 16, 1941, when the Navy moved in and took over a part of the pier for storage purposes. The lease also contains an option to extend it for a period of five years at the same rental, should the Navy require the property for such a period, but the lease is to be renewed annually.

The Harbor Department has repair shops located on the pier, and, to cover the expense of moving these facilities and setting them up in a new location at the rear of the longshoremen's hall, the Navy has agreed to reimburse the Harbor Department in the sum of $13,200. With the Navy in sole possession of this pier, it will be fenced off as is the adjacent Broadway Pier, which is also occupied solely by the Navy.

Mission Bay To Get Sea Wall

As an outgrowth of the complaints of more than two hundred residents of Ocean Beach, a part of San Diego, concerning erosion and the loss of their fine sand beach, the Army Engineers have worked out a plan for a long stone jetty to extend into the sea from the south side of the Mission Bay channel. It is proposed that this be built on a cooperative financing basis with the city providing $50,000 of the cost and the Government assuming the balance.

It has long been the hope of those interested in the Mission Bay area that something would be done to provide a dredged channel entrance to this large but shallow body of water. With the recent granting of a contract to dredge a part of the bay and provide a recreation peninsula located to control erosion of the bay shore, the prospects of opening Mission Bay to eventual use by small commercial and naval vessels and yachts were enhanced. The construction of the sea wall is another step in this direction. Mission Bay is three miles wide in an east-west direction and two miles north and south with an area of approximately four square miles. In the southwest corner is a natural but shallow and treacherous channel to the ocean. This would have to be dredged and another sea wall or jetty provided on the north side to prevent the forming of sand bars.

Another Star & Crescent Ferry

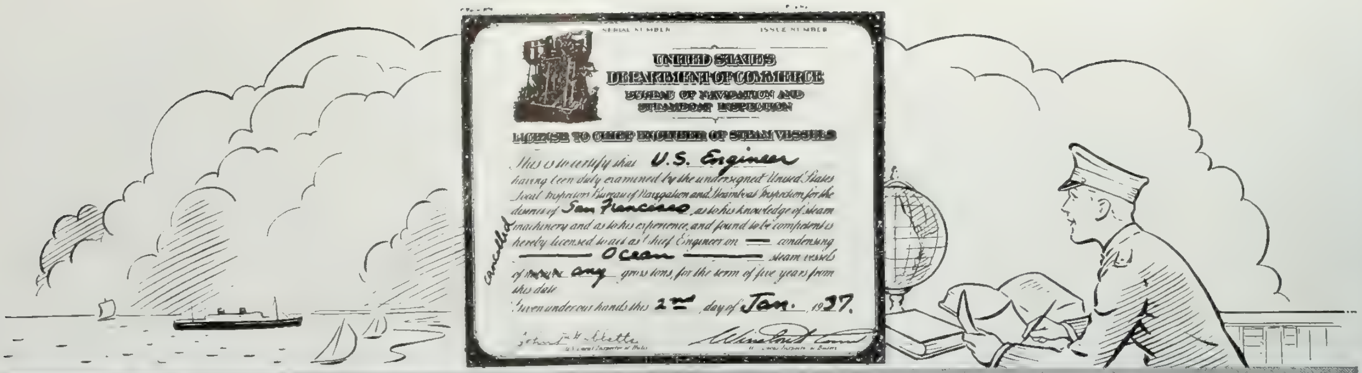
The San Diego Marine Construction Company is building another passenger ferry for the Star & Crescent Boat Company, which will be added to the trans-bay ferry fleet during August. The new vessel is a flat bottom scow type hull of wood construction, and will carry about five hundred passengers on the main and upper decks. The hull is 64 feet 6 inches long overall, 24 feet wide and 5 feet deep with raked ends.

Power will be two "Cummins" 100-hp 6-cylinder diesel engines with reduction-gear drive to twin propellers.

Changes in Tuna Fleet

With the demands of the Navy for more and more of the large tuna clippers, the fishermen have been faced with the problem of converting smaller vessels to their purpose or going out of the business. As most of these men have no other skill and are attracted by the prevailing high prices and demand for tuna, they are proceeding to utilize all available boats.

M. O. Medina has taken over the *Anna K* and placed her in the tuna fishing trade, and is now busy converting the *Genevieve II* to the same purpose. Joaquin Medina, and associates, has taken over the boat *Senorita* and sent her out for albacore and tuna. All the small boats possible to convert to live bait fishing are being prepared for this service while the large long-range clippers are wearing the somber naval dress.



SERIAL NUMBER ISSUE NUMBER

UNITED STATES
DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION AND
STEAMBOAT INSPECTION

LICENSE TO CHIEF ENGINEER OF STEAM VESSELS

This is to certify that U.S. Engineer having been duly examined by the undersigned United States Local Inspectors Bureau of Navigation and Steamboat Inspection for the district of San Francisco, as to his knowledge of steam machinery and as to his experience, and found to be competent is hereby licensed to act as Chief Engineer on — condensing — Ocean — steam vessels of any gross tons, for the term of five years from this date

Given under our hands this 2nd day of Jan. 1937.

Cancelled

U.S. Local Inspector of Hulls

U.S. Local Inspector of Boilers

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ELECTRIC PROPULSION

TANKER CONTROL AND SWITCH GEAR

The entire switchboard, consisting of main control panel and nine other panels, is mounted against the forward bulkhead of the engine room. The engineer facing the board faces forward with the propulsion control at the extreme left or port side.

In the accompanying sketch of propulsion control panel, lever No. 23 is the main reversing lever. Its functions are: to connect the generator to the motor for the proper direction of rotation; to energize the fields in proper sequence for the process of starting as an induction motor with field only on generator; and to put field on motor pulling it into step or synchronism with the generator. This is done at a speed about one-third of normal.

In addition to the off position of this lever, at the mid-point between extreme forward and aft position, it has three positions from off to run in both directions. These are marked 1st, 2nd and 3rd ahead, and same astern.

The first position closes main line high-voltage, cam-operated contactors connecting motor to generator for proper indicated direction. It also short-circuits the main exciter field rheostat to build up exciter voltage for over excitation.

Note: In previous articles, the theory of alternating current, the ac and dc circuits have been discussed. Schematic diagrams were presented. The reader is invited to refer to these diagrams in connection with the accompanying discussion of the control scheme. Both the dc and the ac diagrams refer to the reversing lever, which is a master control discussed herewith.

The second position closes the dc contactor energizing only the generator field from the main exciter already built up to over voltage. Ammeter No. 11 shows over current; ac ammeter 18 and 19 show large current flow. The motor starts to turn. The generator is running at about 1100 rpm as against 3600 or 3800 rpm normal. In a few seconds, the motor is running as an induction motor at three or five per cent less than synchronous speed, determined by the generator speed. The governor has opened up the steam valve to supply necessary steam to maintain generator at the present speed. The ac ammeters show a drop in current, indicating that the lever may now be moved to the 3d position.

The third and run position closes the dc contactor which applies voltage from the main exciter to the motor field. The motor promptly pulls into synchronism; the ac ammeters drop to a low value. The exciter voltage drops down to a value determined by the generator voltage regulator.

The propeller is now running at about one-third speed in the indicated direction, and no further operation is needed until a higher speed is required.

The speed control lever, No. 24 in the sketch, has been left in the low-speed position while operating the reversing lever. It may now be moved by pulling back to any desired position. It latches in place. It operates the turbine governor to cause that regulating device to govern at a higher and higher speed as the lever is pulled back.

The governor opens the steam control valve wide for acceleration and partly closes it when positional speed has been reached, then it continually adjusts the steam valve to hold the speed steady. Thus, definite positions of this speed lever mean definite rpm of the propeller, regardless of wind and weather, clear or foul bottom, light or heavy load. This feature will be a novelty to the marine engineers who are accustomed to manual adjustment of the variable throttle positions needed for steady propeller speeds.

Lever No. 25 is the emergency turbine control lever used only when the turbine governor is not operating, or where the engineer prefers the hand or manual control of the throttle. This lever opens and closes the steam valve through the oil-operated relay valves, and the speed governor has no effect on valve opening when using this lever. The operating characteristics will be similar to a geared turbine propulsion, the engineer continually adjusting the lever to hold the propeller speed.

There is a lever at the left of the three operating levers, not shown in the sketch, attached to the deck, which can be quickly pulled up, tripping the oil control, closing the steam valve. It is an emergency overspeed and trip lever. If for any reason the turbine should suddenly start to speed up, the engineer can trip off the steam supply. The emergency overspeed governor also would trip if the speed were to go high enough. Referring to the sketch, the devices as numbered perform these functions.

1. Generator field temperature indicator, 0° to 200° Centigrade. This indicator should not exceed 125° C. Operates from both field current, a special ammeter short, and field voltage. As the field temperature increases, the resistance of the copper winding increases, causing an increase in the volts per ampere on the field. This is calibrated to read in degrees Centigrade.

2. A temperature indicator, electrically operated, scale, 15° to 125° Centigrade. Can be connected to a small 10-ohm coil, located in several places on the motor and generator stator windings. Temperatures should not exceed 100° C.

3. Temperature test switches used with indicator No. 2. The left-hand one has one position marked TEST, at which the indicator should read 70° C. This checks the instrument. Each of these switches has three positions numbered, which connect the instrument to temperature coils at six different locations in the stators.

4. An indicating lamp, which when lighted indicates that there is voltage on the central bus bar.

5. Control switch, which closes main generator field contactor to energize generator for operation only for in-port pumping. This gives main turbine power for pumping at variable frequency. The generator field must never be energized with the turbine shut down, or left energized while turbine is coasting to standstill after steam is cut off. When standing still, there is no windage and ventilation of the field and it would rapidly overheat, as the electrical energy dissipated in the field is on the order of 15 to 25 kw.

6. Control switch energizes the propulsion control bus bar from excitation bus bar.

7. Control switch, energizes blower motor on propulsion motor. This would run this motor with reversing lever in OFF position. When in 2nd and 3rd positions, this blower motor is energized irrespective of position of control switch No. 7.

8. Control transfer switch transferring from automatic generator voltage control from amplidyne and regulator to manual voltage control from rheostat No. 9 below.

9. Manual-control rheostat controls exciter voltage regardless of generator voltage regulator when switch No. 8 is in proper position.

10. Dc voltmeter, scale 0 to 300 volts, indicates voltage on field of main motor and generator.

11. Dc ammeter, scale 0 to 400 amperes, indicates current in generator field. Operates from ammeter shunt. Normal reading, 160 amperes at 3600 rpm.

12. Dc ammeter, scale 0 to 600 amperes, indicates current in main motor field; normal valve is 400 amperes. Operates from an ammeter shunt.

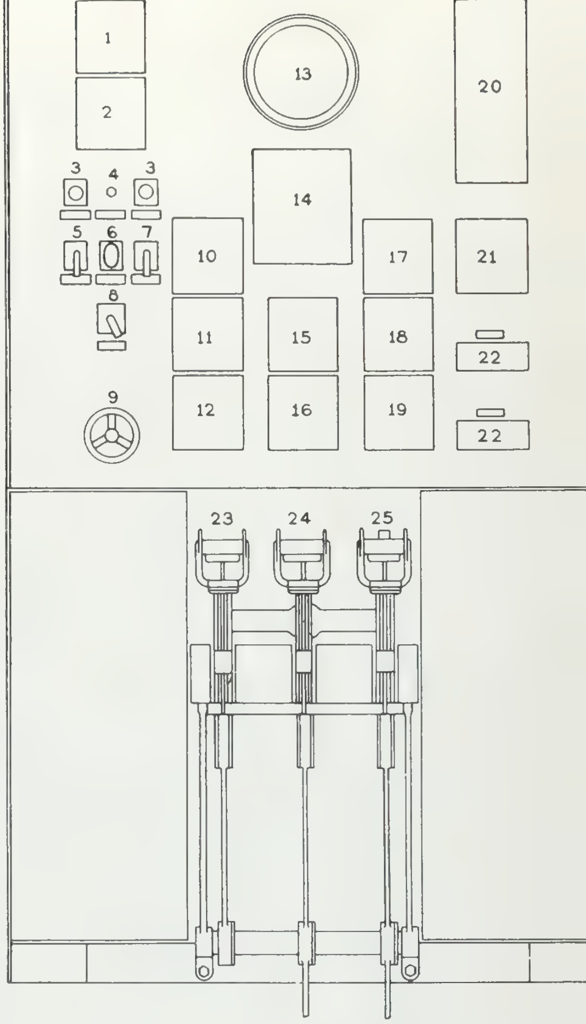
13. Spring-drive clock.

14. Speed indicator and revolution counter on propeller shaft, scale 100 to 0 to 100 rpm. Indicator operates as a voltmeter on a calibrated generator geared to main shaft.

15. Ac wattmeter, scale 0 to 8000 hp. Although the mechanism is a three-phase wattmeter energized from current and potential transformers, its scale is marked in equivalent horsepower. Indicates the power delivery from generator to motor. Except for motor losses, this is shaft horsepower.

16. Speed indicator, scale 0 to 4500 rpm, indicates speed of main turbine. Is a dc voltmeter energized from a calibrated generator on main generator shaft.

17. Ac voltmeter, scale 0 to 300 volts, indicates voltage at terminals of main generator. Energized from potential transformers. Normal is 2300 volts.



18. Ac ammeter, scale 0 to 2000 amperes, normal at 3600 rpm is 1237 amperes. Indicates main line current from generator. Energized from current transformers.

19. Ac ammeter, scale 0 to 2000 amperes. Indicates current to main motor. Energized from current transformers. Normal is 1160 amperes, corresponding to rating of main motor.

20. Phase balance relay monitoring conditions inside the main generator. Normally, the current in the three phases will be exactly the same. If not, there is trouble, and, when the difference exceeds 25 per cent, this relay closes contact and trips off generator and motor field contactors.

21. Ground detector and relay. If current flow from neutral to ground exceed only a few amperes, this relay trips the fields of both motor and generator.

22. Testing receptacles for insertions of plugs for connecting calibrated wattmeters, ammeters and voltmeters to check the switchboard instruments.

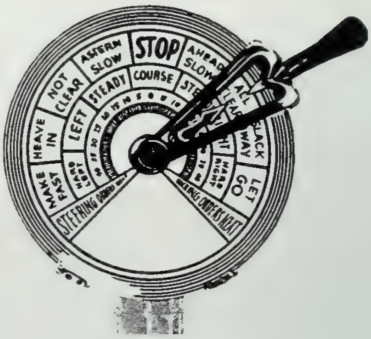
23. Main reversing lever.

24. Turbine governor speed lever.

25. Turbine steam valve control lever.

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

COASTWISE NAVIGATION IN FOG

Throughout the years, it has been an old adage of mariners when navigating in fog to place faith in the *Compass, Log* and *Lead*. Undoubtedly these three "old reliables" have stood the test of time and, in numerous instances, have guided the weary mariner to a safe harbor. However, in the light of modern science and present-day equipment, we must admit that reliance on the old-fashioned compass, log and lead was more or less a hit-and-miss affair, with a great deal of experience, seamanship and a bit of good luck thrown in for good measure.

The magnetic compass will never be entirely replaced by the modern mechanical gyro compass. After all, the gyro compass is a mechanical contrivance, and it may break down at sea; the magnetic compass will always be there to fall back upon. However, the gyro does give us the direction of true North at all times while it is in operation, while the true heading given by the magnetic compass is entirely dependent upon a correct knowledge of the ever changing compass error. After having steamed in dense fog for several days before approaching the coast line, the mariner is usually uncertain as to the accuracy of the compass error, owing to the inability to get azimuths to determine the deviation of the magnetic compass. This uncertainty has always been the source of apprehension upon the part of the mariner when approaching the coast and having to rely solely upon the magnetic compass. On modern ships, we now have the gyro to supplement the old magnetic compass and we can know the direction of true North at all times, independent of the fog or hazy weather.

NEW POLICY

The Office of Supervising Merchant Marine Inspector, San Francisco, advises us of and requests us to make public the following change of policy affecting applicants for renewal of license, new license, or raise in grade of license.

Whereas heretofore it has been the practice to grant an extension of time for furnishing proof of citizenship to all persons applying for renewal or raise of grade of license, hereafter no original license, or renewal of license, or raise of grade of license will be granted until the applicant has presented satisfactory and acceptable proof of citizenship.

Reliance upon the old fashioned chip log or even upon the more modern patent log or "taffrail log" is also subject to error. While the chip log has now been completely relegated to the honored place reserved for all marine devices now retired, the "taffrail log" is in common usage and is a common sight to all seamen.

The Taffrail Log

Though subject to error from numerous causes, the "taffrail log" will, if properly cared for and maintained, give a fairly accurate check on the vessel's speed through the water. However, we must not lose sight of the errors to which any such device is subject on account of the spiral rotator that is towed through the water. The rotator may be, and frequently is, fouled by seaweed or refuse thrown overboard from the ship. Other causes of error are (1) bending of the blades; (2) a towing line that is too short; (3) action of heavy head or following sea; and (4) mechanical wear on the register parts.

Of course, the log will not indicate the amount of set or drift causes by the wind and tides; allowance must be made for these two varying factors when estimating the ship's speed as indicated by the patent log. It is believed by many mariners that a fairly accurate estimate of the vessel's speed and run through the water can be made by having a knowledge of the pitch of the propeller and the revolutions turned per minute; after all, this is applying the same principle used in the operation of the patent log, and we do eliminate the danger of fouling by seaweed and other errors before mentioned.

The Lead Line

The lead line that is so familiar to all mariners has certainly stood the test of time. How well we can all look back to the cold dark nights when we stood in the "chains" heaving the "blue pigeon" and, in spite of half frozen hands and wet clothing, calling out at regular intervals in true "Mark Twain" style, the *marks* and *deeps* indicating the depth of the water. This was and is more or less a hit-and-miss method; we must depend upon the skill of the leadsman, whether or not he really *gets bottom* and if so to the degree of accuracy used in calling out the correct sounding. Even then, the sounding given is the depth of the water from the surface and not the depth of water under the vessel's keel. This hand method is good only in comparatively shallow water; and if the ship is going at full speed, it will require a very skillful leadsman, even in shallow water, to sound with any degree of accuracy.

Even with the more modern patent mechanical sounding machine, successful soundings are dependent upon many things. It usually requires three men to properly operate the sounding machine; the time required for the operation is entirely too long and tedious to suit the requirements of the modern high-speed steamer. Sometimes when sounding by this method, the lead may be lost at the bottom of the sea, or, after taking a sounding, the glass tube may be broken accidentally, thus requiring a repetition of the operation. Even if all goes well, the time element is too great; by the time the sounding is recorded, the vessel has traveled far and may be standing into danger.

However, in spite of all these handicaps and obstacles, if the mariner is approaching a well surveyed coast line where the chart shows the soundings and various depth curves, with proper vigilance and good seamanship the ship can usually be brought to port in safety.

Regardless of the method used, soundings should never be neglected. No accurate position can ever be determined by soundings alone, but they will afford a check upon the ship's position. In addition to having the depth of the water marked on the chart. there is usually a description of the bottom, whether, mud, sand, shale, etc. With the old type of sounding lead in use, the nature of the sea bottom may be determined with some degree of accuracy, by means of "arming" the bottom of the lead with a mixture of soap and tallow, or some other water resisting substance that will pick up a sample of the sea bottom. This sample, together with the depth of water, when compared with the chart, will in most cases give a general idea as to the position of the vessel; at least you will be able to tell whether or not you are outside or inside of any certain depth curve shown on the chart. Do not expect to get an exact agreement with the soundings as shown on the chart, and never rely on one sounding only. A good practice is to lay off a chain of soundings on a piece of tracing paper, along a line which represents the track of the ship according to the scale on the chart. After several soundings have been obtained at the proper intervals, by moving the tracing paper over the chart in the general vicinity of the vessel's dead reckoning track, an estimate of the ship's position can usually be fairly well determined.

How Can the Vessel's Position Be Determined by Echo?

We all know that a cliff or high land will return echoes of sound across a valley or level plain. The speed of sound in air is about 1120 feet per second, or sound will travel through air for a distance of one mile in about five seconds. This is ably illustrated when we see the steam coming from the whistle of a ship. The speed of light is 186,000 miles per second. If a vessel was about a mile away, you would see the steam emitted from the whistle almost instantaneously, but it would be almost five seconds before you heard the sound of the whistle. It is the practice of many navigators, while in many inland passages, to apply this principle to navigation of the vessel. While it may be "rule of thumb" method, it has some value if correctly applied. By sounding short blasts on the whistle or siren when close to a steep shore line or obstruction, and noting the time it takes the echo to return, a fair estimate can be made as to the distance off of the object causing the echo. Remember, however, that the sound has to travel from the vessel and then return in the form of an echo, therefore use only one-half of the elapsed time to estimate the distance.

How is the Echo Principle Applied To Obtaining Correct depth of the Water Under the Ship?

Sound travels through water at the rate of 4800 feet or 800 fathoms per second. Should a stop watch be started at the instant that a sound is made at the bottom of the ship and stopped at the precise instant that the echo returns from the ocean bottom; if the elapsed time was one-quarter second, then the depth of water under the vessel would be 100 fathoms. It is true that the sound would have traveled 200 fathoms, but the depth of the water under the vessel would be only one-half this distance because the echo had to return from the floor of the ocean to the bottom of the ship. It is now obvious that if this principle can be put into practice on board ship, the sounding machine and the lead line can be put aside for emergency use only.

Such an apparatus has been developed and brought to a state of perfection and is now almost standard equipment on modern vessels.

The Sonic or Echo Depth Finder

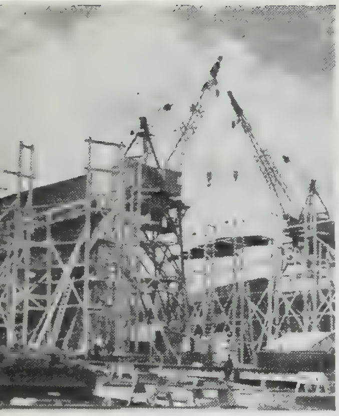
The principles of echo sounding have been developed by the Submarine Signal Corporation of Boston, Massachusetts; the original inventor was Professor R. A. Fessenden of the same company.

This instrument is usually called a Fathometer.

The echo principles have been applied to this instrument by means of three distinct units: (1) the *indicator* with its accompanying *amplifier;* (2) the sound producer or *oscillator* and (3) the sound receiver or *hydrophone.*

Indicator and amplifier, which in-

(Page 88, please)



On the Ways -

SHIPS IN THE MAKING

RECORD-BREAKING DELIVERIES CONTINUE IN JUNE

SHIPYARD	NUMBER	TYPE OF SHIP
Alabama Dry Dock & Shipbuilding Co. Mobile, Alabama	1	Liberty
Bethlehem-Fairfield Shipyard, Inc. Baltimore, Maryland	11	Liberty
Bethlehem-Sparrows Point Shipyard, Inc. Baltimore, Maryland	1	Tanker
California Shipbuilding Corporation Wilmington, California	15	Liberty
Delta Shipbuilding Company, Inc. New Orleans, Louisiana	1	Liberty
Federal Shipbuilding & Dry Dock Co. Kearny, New Jersey	1	C-2
Houston Shipbuilding Corporation Houston, Texas	4	Liberty
Ingalls Shipbuilding Corporation Pascagoula, Mississippi	1	C-3
North Carolina Shipbuilding Co. Wilmington, North Carolina	5	Liberty
Oregon Shipbuilding Corporation Portland, Oregon	9	Liberty
Permanente Metals Corporation (Richmond Yard No. 1) Richmond, California	4	British
Permanente Metals Corporation (Richmond Yard No. 2) Richmond, California	4	Liberty
South Portland Shipbuilding Corporation South Portland, Maine	1	Liberty
Sun Shipbuilding & Dry Dock Co. Chester, Pennsylvania	4 1	Tanker C-2
Todd-Bath Iron Shipbuilding Corp. South Portland, Maine	3	British
Total	66	

In another record breaking month of construction by American shipyards, 66 new cargo ships and tankers were put into service during June. The month's total represents 450 per cent increase in production since Pearl Harbor.

The 66 vessels of 731,900 deadweight tons constitute a new world's record for steel ship construction, surpassing the mark established last month when 58 ships of 632,304 deadweight tons were delivered. The best previous record was set in September, 1919, when 618,886 deadweight tons of steel ships were delivered at the peak of World War I program.

FLASH . . . July Deliveries Set New Record

The Maritime Commission announced that there had been 70 deliveries of 790,000 deadweight tons during the month of July, with honors going for the first time in many months to the East Coast, where Bethlehem Fairfield yard led the country with the delivery of 12 "Libertys."

In addition to announcing the achievements of the month of June, a summary of the progress accomplished during the first six months of 1942 shows that 228 ships of approximately 2,544,000 deadweight tons have been delivered by U. S. shipyards.

Included in the ships delivered during June were 51 Liberty ships, seven cargo carriers for British account, five large tankers, two C-2 vessels and one C-3. Once again Pacific Coast shipyards set the pace for other sections of the country with four yards turning out 32 ships. East Coast yards, showing steady improvement over last month, completed 27, while Gulf yards had seven deliveries.

The month of June started and finished with shipbuilding records. On June 1, the **Oregon Shipbuilding Corporation,** Portland, Oregon, delivered a completed ship just 46 days after its keel had been laid. The *Thomas Bailey Aldrich,* 36 days on the building ways and ten days in fitting out, has the distinction of being the fastest-built steel ship of its size. Oregon delivered nine ships in June, the average time for completion being 54 days per vessel.

The **California Shipbuilding Corporation,** Wilmington, California, brought the month to a spectacular close by delivering 15 Liberty ships, a world's record for the production of completed ships by a single shipyard in a single month. The famous World War I yard at Hog Island (Pa.) turned out only eight ships in its best month, September, 1919, ten months after the Armistice.

Bethlehem - Fairfield, Baltimore, Maryland, was the most productive yard along the Atlantic Coast and second throughout the nation. It delivered 11 Liberty ships, a record for this yard. Increased production in other Eastern yards was noted. **North Carolina Shipbuilding,** Wilmington, North Carolina, put into service five ships. **Sun Shipbuilding and Dry Dock,** Chester, Pennsylvania, the foremost tanker construction plant in the world, delivered four large tankers and one C-2 vessel. Along the Gulf, **Houston S. B. Co.** set the pace with four deliveries. During the month, **South Portland Shipbuilding Corporation,** South Portland, Me., delivered its first Liberty ship. All emergency shipyards that were set up a year ago are now in production.

The records of June were made possible through the cooperative efforts of shipyard labor and management. Many thousands of shipyard workers, most of them untrained in shipbuilding before coming to the yards, are becoming more familiar with their jobs, and as a result production increases.

A review of the progress made during the last six months shows there has been a steady increase with each month. Beginning in January when 16 ships of 197,628 deadweight tons were delivered, the monthly production has been: February, 26 ships, 289,549 tons; March, 26 ships, 291,473 tons; April, 36 ships, 401,632 tons, and May, 58 ships, 632,304 tons; and June, 66 ships, 731,900 tons.

The shipbuilding program had been so accelerated that before the end of April, more ships had been completed than during the entire year of 1941 when 103 ships of 1,088,497 deadweight tons were delivered. Comparing the monthly record during 1941 with this year's score, in the month prior to Pearl Harbor there were produced only 12 ships as compared to the 66 in June, 1942, an increase in production of 450 per cent.

Tankers at Marinship

Revealing that the new Sausalito shipyard operated by the Marin Shipbuilding Division of the W. A. Bechtel Co. will soon be converted into a plant for construction of tankers, Rear Admiral Howard L. Vickery, vice chairman of the United States Maritime Commission, addressed thousands of workers at the "Marinship" yard in July and told them of their increased responsibility in the war effort.

Introduced to the assemblage by K. K. Bechtel, vice president in charge of "Marinship," Admiral Vickery declared, "Through the confidence we have in your management, you have been selected as a tanker building yard. The backbone of the merchant marine is the tanker fleet, and yards that are building tankers can look forward to a longer life and more permanency than the builders of any other type of seagoing vessel."

The only thing that will delay the change-over from construction of Liberty ships, three of which are already under way at the "Marinship" plant, will be the speed in which engines for tankers can be supplied and how rapidly the new yard can get going in full operation, Vickery said.

"You have done a fine job in building this yard in four months, and in getting under way in ship construction. This shipyard is well ahead of what I expected," Vickery declared. "Now you are our reserve in the bank and we will soon be depending upon you to deliver tankers and increase the tanker fleet which is so vital to America."

Carl W. Flesher, West Coast regional director of the Maritime Commission, told reporters following Admiral Vickery's visit at "Marinship" that "a full round" of Liberty ships would probably be built at the new Sausalito plant before conversion into tanker production. "Marinship" officials believe that they will be able to begin tanker work by December.

Barge Awards

Contracts for the construction of 28 wooden barges have been awarded to seven shipbuilding companies on the Atlantic and Pacific Coasts and the Great Lakes, the Maritime Commission announced late in June.

AT OREGONSHIP'S launching of S. S. Harvey W. Scott on July 19. Left to right: Edgar F. Kaiser, Mrs. Wm. Weber, sponsor; Wm. Weber; Mrs. Margaret Kiely, matron of honor.

The barges to be constructed are 180 feet in length and 750 deadweight tons at 11-foot draft. In conformity with the terms of the proposal, not more than five barges have been awarded to any one contractor. The contracts will provide that the first barge must be delivered within 150 days, and the last of each five in 270 days. The names of the contractors, together with the prices bid, are as follows:

Name	No. of Barges	Price Each
Waterways Engineering Co. Green Bay, Wisconsin	3	$170,729.00
Marinette Marine Corp. Marinette, Wisconsin	5	178,731.00
Hodgson-Greene-Haldman Shipbuilders Long Beach, California	5	181,263.00
Casco Shipbuilding Co., Inc. Freeport, Maine	5	190,488.80
Richmond Shipbuilding Corp. Richmond, Maine	3	191,290.00
Seabell Shipbuilding Co. Seattle, Washington	5	195,815.00
Howard L. Jackson, Norman E. Jackson (Belfast Shipbuilding Corp.) Belfast, Maine	2	214,000.00

New Sacramento Yard

Early in July, W. H. Stevens, president of the Capital City Shipbuilding Company, announced that his organization has leased the Sacramento and San Joaquin River Lines shipyard, located at Sacramento, California, on the Yolo County side of the river in the vicinity of the Tower Bridge.

This yard has been used by the River Lines for the construction of wooden vessels and barges for a great many years, and is fully equipped for building wooden vessels, having five large ways.

Present personnel will be retained, and additional key men experienced

THREE GENERATIONS BUILD TANKERS . . .

CHRIS LEINHOUSER (left), one of the oldest employees at Sun Shipbuilding and Dry Dock Company, Chester Pennsylvania, works side by side with his son Otto and his grandson Otto, Jr. Chris was building ships at the same yard during World War I, while his son was fighting overseas as an Army captain.

in wooden construction will be employed.

An official of the company is now in Washington engaged in obtaining a contract for wooden vessels for the account of the Government.

Organization of a second yard for the construction and repair of steel vessels in the Bay Area is now being perfected.

Tug Bids

Bids for the construction of oceangoing wooden tugs of the V3-S-AH2 design have been invited and will be opened on August 5, the Maritime Commission announced.

The vessels, which will be 150 feet in length, can be used for deep water work and are being constructed primarily as propulsion units for both concrete and wooden barges now being built to relieve the increasing demands upon cargo tonnage.

Bids will be considered for one to six tugs from the same contractor, but not more than six tugs will be awarded for construction at a single yard or plant. The first tug is to be delivered within 180 days, and the last tug by 360 days.

The Commission said that bids also would be considered for the construction of tugs of a design other than that called for, but having comparable characteristics. Alternate bids, however, will not be considered unless a bid is also made for Design V3-S-AH2.

Bids will be considered on both the fixed price and adjusted price basis, which will not be considered unless accompanied by a bid on a fixed lump sum price basis.

Repair Work In Shipyards

Ships in transit on the ocean lanes is what counts in helping win the war these days. An existing ship kept in effective operation is just as important as a new ship delivered. In this respect, the old established shipbuilding and drydock plants of the San Francisco Bay area are doing a fine service in the all-out war effort.

The Moore Dry Dock Company plant at Oakland is a notable example. This plant during the month of June, in addition to its all-out effort of maintaining full speed on new construction in two yards, totaling eight building ways, has also drydocked and/or repaired, reconditioned, painted, converted some 64 vessels, all of which were made more effective in the transport overseas of munitions and troops.

Rescue Tugs

Northwestern Shipbuilding Company, Bellingham, Washington, announced late in July that a contract for four 166-foot wooden Navy rescue tugs had been awarded to them. The company is also bidding on six 150-foot seagoing wooden tugs for the U. S. Maritime Commission.

Calship Breaking Records

The California Shipbuilding Corporation, Wilmington, California, has hit its stride in breaking records, and, as we go to press, announcement was made that the *Starr King* was launched 39 work days after its keel was laid. This followed right after the launching of *Stockton,* which was 40 days on the ways, and which broke the 42-day record previously held by Oregonship.

The pace for breaking records started in June, when Calship broke the world's record for ship deliveries, the story of which appears on page 50 of this issue.

Confidence in this yard's production speed was evidenced by contracts for 60 additional "Libertys" awarded the last part of July by the Maritime Commission. This brings the yard's total to 224 Liberty ships awarded since its start.

Plywood Lifeboats

A contract for the construction of 1000 plywood lifeboats, the first of their kind ever built, has been awarded to the Gunderson Bros. of Portland, Oregon, by the Maritime Commission.

The new plywood vessels have passed Coast Guard regulations and are said to have certain advantages over metal boats. Described as a new development in lifeboat production, the new boats will be 22 feet long, and one out of every four to be placed on Liberty ships will be self-propelled.

The total cost of the contract is approximately $1,300,000. Beginning in October, Gunderson Bros. will produce enough of these craft to supply 10 Liberty ships. In November it is expected that lifeboats enough for 40 cargo ships will be built, and 50 each succeeding month until March, 1943, when the contract will be completed.

Each boat has a passenger capacity of 25 persons, and is equipped with both sails and canvas siding for protection against wind and rain. They are made of six-ply Douglas fir, under a new process which is not only successful but has passed every Coast Guard test for safety of life at sea.

While the cost of these boats is approximately the same as their metal counterparts, it is, nevertheless, expected that upwards of a ton of metal per boat will be saved through their use aboard Liberty ships.

SHIPBUILDERS and ENGINEERS

BUILDING WAYS FOR WOOD AND STEEL CONSTRUCTION

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ALAMEDA PLANT
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and Industrial Repairs
TWO DRY DOCKS
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FOOT OF SCHILLER STREET
Telephone LAkehurst 2-1500

GENERAL ENGINEERING
and DRY DOCK COMPANY

New San Francisco Yard

Barrett & Hilp, general contractors at San Francisco, were awarded a contract by the Maritime Commission to build thirteen large concrete barges, it was announced on July 20. To be built like ships and designed for ocean travel, the first is scheduled to take to the water in December, 1942. Work has already started on the 60-acre site in South San Franciso, which will contain several construction basins.

Yard Construction To Start

Construction of the Columbia Shipbuilding Company yard at Columbia City, Oregon, will start immediately, according to an announcement of John Webb, executive vice president of the firm. Contract for building the four 440-foot ways, loft, and office building was awarded to Borchard Construction Company of Portland, Oregon, and Seattle. Present plans call for building two 180-foot barges on each way.

360% Increase in Naval Construction

The House Naval Committee announced on July 23 that the entire naval ship construction shows a 360 per cent increase over a year ago. The report stated that 3230 combatant and auxiliary ships and patrol and mine craft were building as of June 30, 1942, compared with 697 a year ago. During the fiscal year 60 combatant vessels were completed as compared with 48 scheduled.

Richmond No. 1 Launches First Liberty

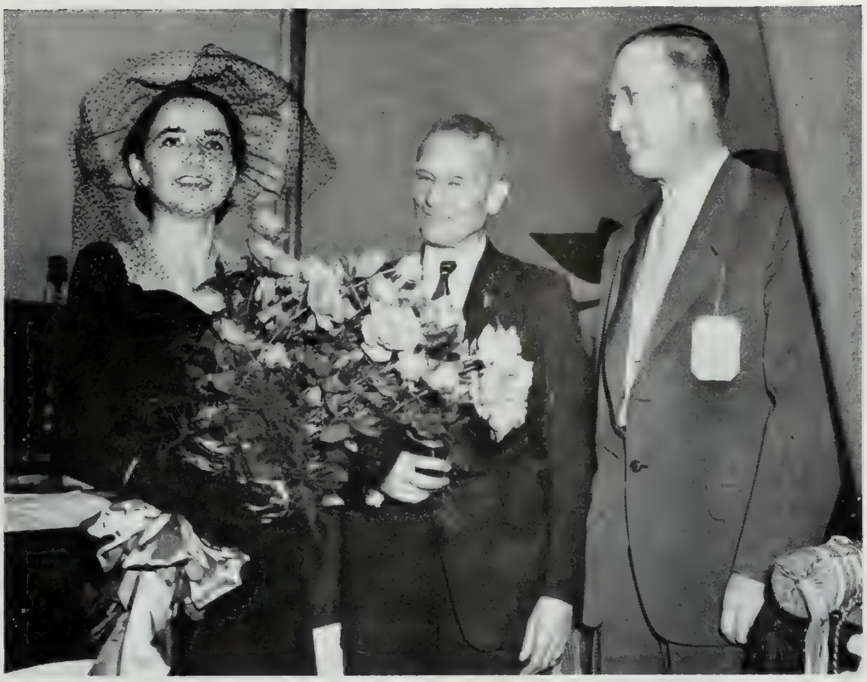
The Richmond Shipyard Number One, Richmond, California, last of July launched the *Edward Rowland Sill,* the first Liberty vessel since the completion of the 30 ships for the British Purchasing Commission. The yard is now using the Maritime Commission's prefabrication plant, and it is expected that the yard will be turning out one ship a week from the set of five ways.

Triple Launching At Fairfield

The first triple launching of Liberty ships in an Atlantic Coast shipyard took place on Saturday, July 4, at the Bethlehem-Fairfield Shipyard, Baltimore, Md., where three of the Maritime Commission's emergency cargo ships slid down the ways in a little more than an hour, the Maritime Commission announced.

At Bethlehem-Fairfield the *Joseph Stanton* was launched at 10.15 A. M., the *William Wirt* at 10.45 A. M. and the *Luther Martin at* 11:30 A. M. The launching of the *William Wirt* sets a record for the yard, in that it was launched 52 days after keel laying. The *Luther Martin* was launched 57 days after keel laying. The best previous record was 58 days. These are launching records for the Atlantic Coast shipyards.

Commissioner Thomas M. Woodward of the Maritime Commission was guest speaker and presented maritime workers' emblems to five members of



S. S. JOHN P. POE WAS LAUNCHED on June 25, the day the Bethlehem-Fairfield yard received its "M" Flag from U. S. M. C. Mrs. C. G. DeKay sponsored the Liberty vessel. Onlookers are Rear Admiral Emory S. Land (center) and A. B. Homer, president of the yard.

the yard's Victory Production Committee. Emblems for the remainder of the workers will be given at a more convenient time.

Miss Ruth S. Reece, niece of Julius A. Bouslog, district manager for the Maritime Commission at Baltimore, sponsored the *Joseph Stanton.* Mrs. Harmon H. Hoy, another niece of Mr. Bouslog, sponsored the *William Wirt,* and Mrs. Charles A. Swartz of North Baltimore, Ohio, sponsored the *Luther Martin.* As she is the mother of five sons in the service—two in the Army, two in the Navy and one in the Air Corps—Mrs. Swartz had been asked to launch this new vessel of the Liberty Fleet.

Bethlehem-Fairfield Awarded "M" Flag

Presentation of the Maritime Commission's "M" Burgee, the Victory Fleet Pennant and the Employees' Insignia to the Bethlehem-Fairfield Shipyard, Baltimore, was celebrated with elaborate ceremonies on Saturday, July 25. Thousands of shipyard workers laid down their tools for about an hour and crowded around the platform when Rear Admiral Emory S. Land, Chairman of the United States Maritime Commission, the principal speaker of the day, presented the flags to T. S. McElroy, yard manager, and the button to B. T. Manor, who represented the employees. Similar buttons were later given to all executives and workers in the yard and in the fabricating plant.

The Bethlehem-Fairfield yard, which builds Liberty ships, is the first East Coast yard to be so honored. The yard led all others on the East Coast during the month of June by delivering into service 11 Liberty ships.

J. M. Willis, vice president and general manager of the yard, acted as master of ceremonies and introduced the speakers, among whom were Herbert R. O'Conor, Governor of the State of Maryland; Howard W. Jackson, Mayor of Baltimore; and A. B. Homer, president, Bethlehem-Fairfield Shipyard, Inc.

Launching of the Liberty ship *John P. Poe* climaxed the event. This is the 46th Liberty vessel launched at Fairfield. Mrs. C. G. DeKay, a niece of Admiral Land, was sponsor and christened the vessel.

The Bethlehem-Fairfield yard was started less than a year and a half ago, when the present site at Curtis Bay consisted mainly of unimproved marsh land. Four old ways were rebuilt and twelve new ways were added. The nearby Standard Pullman car shop was selected as fabricating shop. The first keel was laid on April 30, 1941, and this vessel, the *Patrick Henry,* was launched five months later, on Liberty Fleet Day, September 27. The original contract called for fifty Liberty vessels, to be completed by the end of March, 1943. The last of these will be delivered about the middle of August, this year. To date the yard has orders for 248 vessels, all to be delivered by the end of 1943. Best record today, from keel laying to launching is 51 days, while a hull has been outfitted in 11 days compared with the 94 days required for the first vessel delivered from the yard. At present the yard employs about 30,000 men, most of whom had never seen the inside of a shipyard before coming to Fairfield.

Another Mid-Air Christening

Pacific Bridge Co., Yard No. 1, Alameda, California, christened two more "Coasters" on July 27 by their unique method of suspending a platform from a gantry crane between the stern and bow of the ships.

The *Samuel V. Shreve* was christened by Miss Jenny McIntyre, sister-in-law of James Smith, principal machine inspector for the U. S. Maritime Commission in Yard No. 1. The *Benjamin Sherburn* was christened by Mrs. William Fawke, wife of the principal hull inspector of the Alameda yard.

Pictures and explanation of this type of launching ceremony were presented in the July issue of PACIFIC MARINE REVIEW.

Vancouver Launches— To Build New Type

On July 4 the Kaiser Company, Inc., yard at Vancouver, Washington, which only six months ago was a barren site, launched the *George Vancouver,* their first ship.

Mrs. J. L. Stromme, wife of Col. J. L. Stromme, commanding officer at Portland, Ore., sponsored the *George Vancouver.* The keel of this new Liberty ship was laid on April 15, 79 days having elapsed from keel laying to launching.

With the launching of the second Liberty vessel at Vancouver, announcement was made by the yard that this was the last of the "Libertys" to be produced at that yard and that a new type of vessel would soon be sliding down the ways at the rate of four each week when the peak of construction is reached. No details were forthcoming up to this date, but it is rumored that small tankers are to be built.

Coastal Tankers Launched On Great Lakes

The Commission also announced a double launching on the Great Lakes on July 3, when the coastal tankers, *Salt Creek* and *Titusville*, slid down the ways of the Barnes-Duluth Shipbuilding Company, Duluth, Minnesota. On June 1 the first of the Commission's oceangoing ships to be built on the Great Lakes were launched at Barnes-Duluth when two other coastal tankers were launched.

Mrs. Harold Stassen, wife of Governor Stassen of Minnesota, sponsored the coastal tanker *Salt Creek*. Mrs. Elizabeth Krieps, mother of two sons in the armed forces and a third son registered for air service, sponsored the *Titusville*. Mrs. Krieps is the wife of Martin Krieps, head of the International Brotherhood of Boilermakers, Iron Shipbuilders' Welders and Helpers, the leading union at the Barnes-Duluth yard.

Double and Triple Launchings at Federal

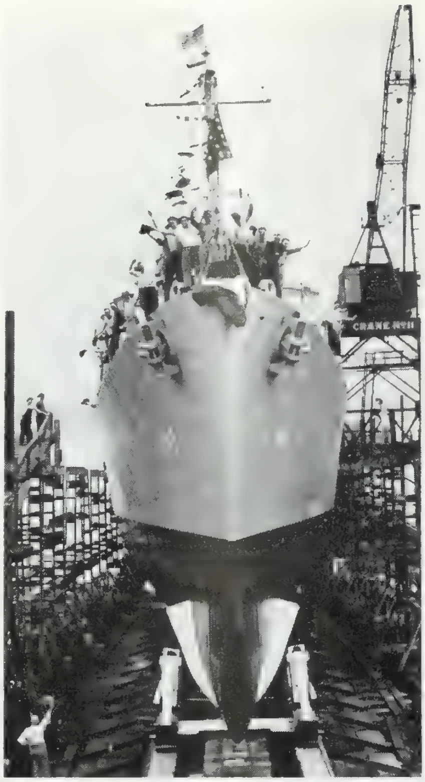
Three destroyers in 35 minutes, the Navy's newest triple threat to enemy submarines, were launched at Kearny, N. J., by the Federal Shipbuilding and Dry Dock Company, U. S. Steel subsidiary, on July 19.

The triple launching was accomplished in the same shipyard where a new world's record of four destroyers launched in 50 minutes was set last May 3. The yard has had a number of twin launchings of destroyers.

A torpedo expert's name was given the first of the three destroyers sent down the ways, the U. S. S. *Davison*. The sponsor was Mrs. Gregory C. Davison of New York, widow of Lieutenant Commander Gregory Caldwell Davison, U.S.N., whose name the Davison bears.

Commander Davison invented new and useful improvements for torpedoes and developed many features of the Holland-type submarine.

Second down the ways at Federal was the U. S. S. *Edwards*, named in memory of Commander Walter Atlee Edwards, who won the Congressional Medal of Honor for rescuing 482 men, women and children while captain of the destroyer *Bainbridge*.



U. S. S. LA VALLETTE, destroyer, sliding down the ways of the Federal shipyard on June 21, followed the U. S. S. Jenkins in a twin-launching ceremony.

The sponsor of the *Edwards* was Mrs. Edward Brayton of Fall River, Massachusetts, the former wife of the late Commander Edwards.

The treble ceremony was concluded with the launching of the U. S. S. *Saufley*, sponsored by Mrs. Helen O'Rear Scruggs of Frankfort, Kentucky, formerly the wife of the late junior grade Lieutenant Richard Caswell Saufley.

A double launching took place on June 28 when the cargo carriers *Santa Cecilia* and *Santa Margarita* were sent down the days in the Kearny, N. J., shipyard.

The *Santa Cecilia*, first of the sister ships into the water, was sponsored by Mrs. R. Ranney Adams, wife of the executive vice president of the Grace Line. Mrs. Joseph P. Grace, Jr,. daughter-in-law of Joseph P. Grace, Sr., chairman of the board of the Grace Line, christened the *Santa Margarita*.

Shipyard Changes Hands

The construction company of Thompson - Starrett Company, Inc., announces in its annual report that it has acquired control of the St. Johns Shipbuilding Company, Jacksonville, Florida. The company started work on its shipyard on April 13, 1942, and had planned to lay the first keel last month. It has contracts for 30 Liberty ships.

Wooden Barge Bids

Sixteen Pacific Coast shipbuilders entered bids with the Maritime Commission for construction of a number of wooden barges. The barges to be constructed are 274 feet long, will have a draft of 20 feet, 6 inches and a deadweight tonnage of 3750 tons. Terms of the proposal bids provide for not more than 24 barges nor less than six from one contractor. A total of 24 firms entered bids.

Tid Bits on the Ways

NAMES FOR SHIPS: A move has started in San Francisco by the members of the National Organization of Masters, Mates and Pilots of the United States, Local 90, asking "the committee in charge of naming Liberty ships to consider naming a vessel, which is now being built and is to be launched on Labor Day of 1942, after Andrew Furuseth, and in this way honor his memory as one of this Nation's foremost leaders in the maritime industry." . . . Oregonship received approval from U.S.M.C. to add names of eight more Oregon historical characters to its list of historical names for Liberty vessels to be launched this summer.

TRANSPORTATION: Ferryboats are back on the Portland-Vancouver run after a decade in order to conserve tires and space on public carriers. . . Plans are to place the San Francisco Bay ferries back in schedule, plying from San Francisco to Sausalito, and also to Richmond . . . special buses from several points in San Francisco direct to Marinship yard in salito, and also to Richmond.

LABOR: Wages of shipyard workers in the nation's Navy yards will be increased to conform with the rates paid in private yards. This will be an increase of over $1,000,000 a week for wages.

Keep Posted!

NEW EQUIPMENT AND MACHINERY

for . . .

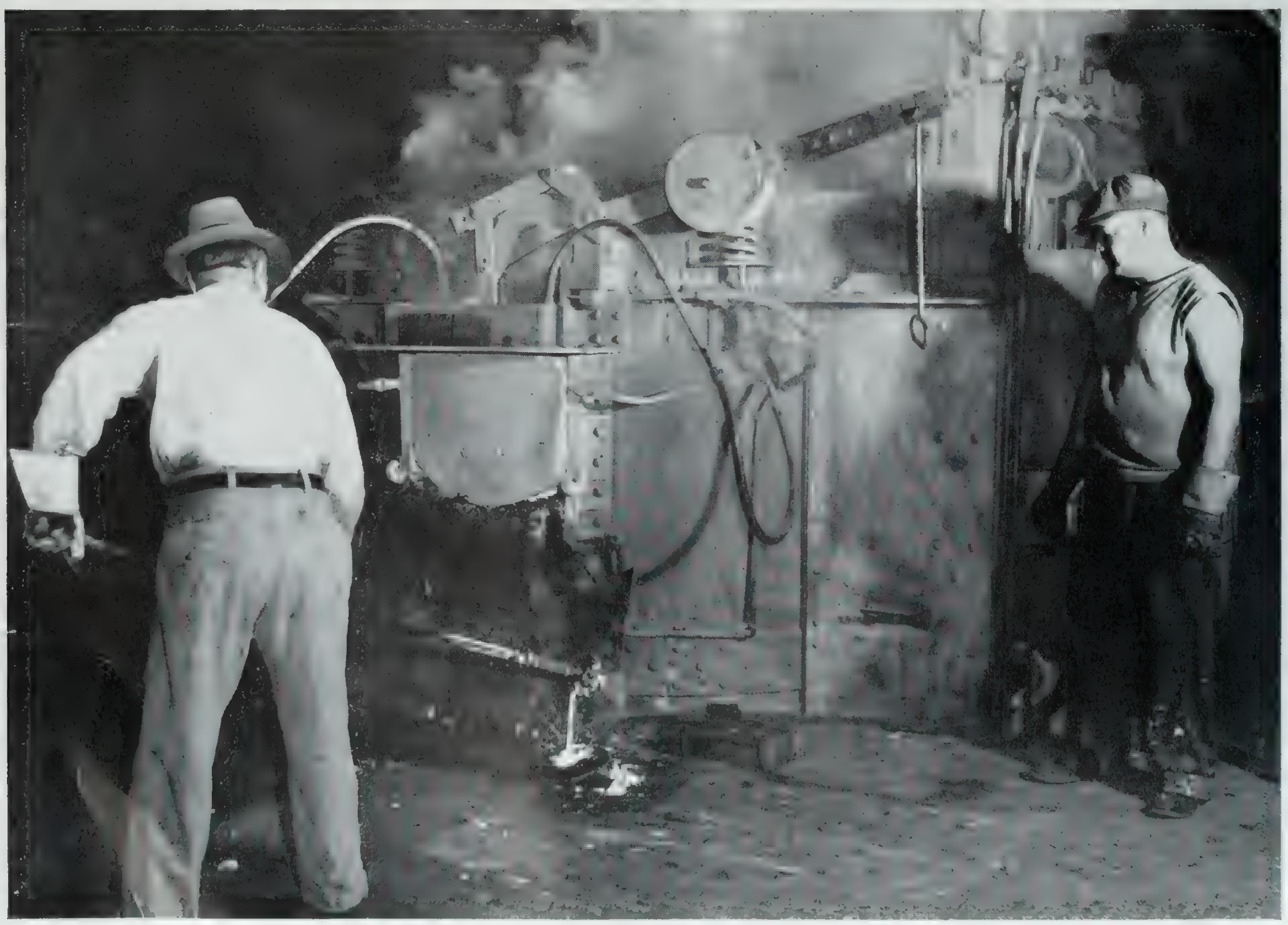
YARD
SHIP
and DOCK

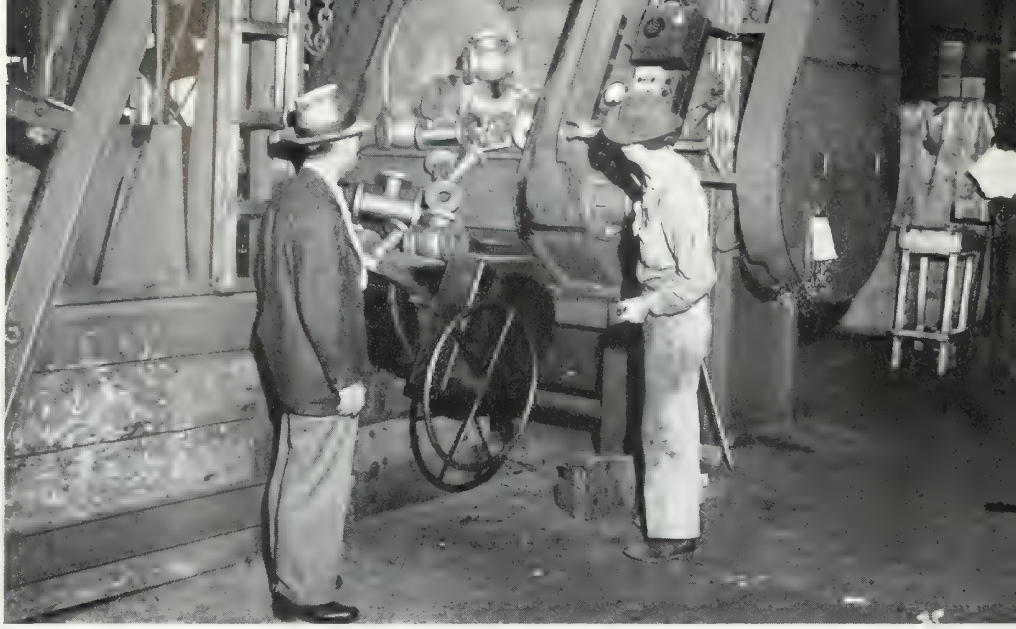
Cast Steel Valves

"ALL-OUT FOR VICTORY"

Total war does not mean the manufacture of war matériel in *addition* to regular production; it means the manufacture of war needs *instead* of regular peace-time production. The attack on Pearl Harbor clearly demonstrated that it is "Guns Now, Butter Later," if the United Nations are to win this war.

LATEST SPECIMENS of molten metal is withdrawn from the furnace for metallurgical test prior to casting in valve molds.





R. J. CASWELL inspects fittings and valve parts as they come out of sand-blast drum prior to machining.

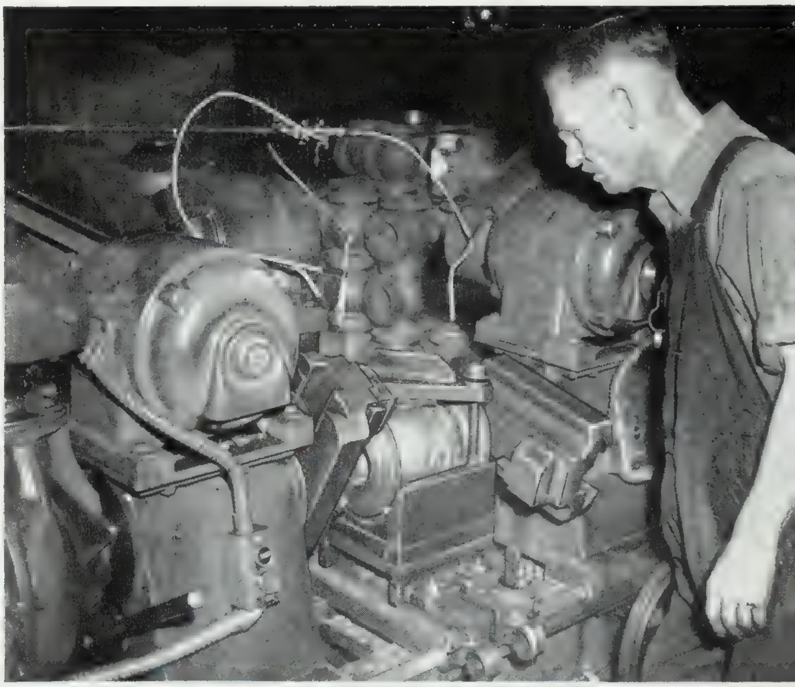
Typical of the reaction on the Pacific Coast is that of the Los Angeles Steel Casting Company. On December 6, this firm enjoyed a satisfactory peace-time volume. On December 8, the thoughts of the management turned to war. Cast steel valves are vitally needed in all ship construction programs, and L. A. Steel knew what its job would be.

Production of Nikeladium valves has been greatly stepped up since the first of the year. Plant expansion, together with intelligent subcontracting, has acted to bring about big increases. Three shifts are now working in the foundry, and normal selling has been practically eliminated.

The photos on these pages illustrate the four principal steps in the production of Nikeladium valves: steel furnace, sand blasting, machining and assembling. Bodies, bonnets, yokes and hand-wheels, the heavier parts of these valves, are cast steel, produced in acid electric furnaces under rigid metallurgical control, and are poured into sand molds.

Before machining, these parts are heat treated for greater stamina. Moving parts, or parts subject to abrasion or other wear, such as stems, plugs and seats, bushings, glands, etc., are chrome molybdenum, chrome nickel, nickel bronze or hardened steel.

Nikeladium cast steel valves, veterans of hard service in active peacetime use, have assumed a small but exceedingly vital part in the Battle of Ships, which may determine the outcome of this war.



SIMULTANEOUS machining on three faces of globe valve body held in jig at center of automatic lathe built especially for this job.

Finished globe and angle valves are wheeled away from the assembly line. Note pneumatically operated vises in foreground, an L. A. Steel development.

WOLMANIZED LUMBER ELIMINATES BARGE DECAY

Although wooden barges have been used extensively on both coasts, many operators complain that rapid decay within the hull necessitates frequent inspection and repair. Some barges have been built of wood impregnated with creosote preservative in an attempt to eradicate this costly maintenance problem. Because the nature of creosote is such that it may damage certain cargo, burn the skin of crew members, and increase fire hazard, this solution has not been practical in all cases.

Using a dry-salt preservative agent for the first time to eliminate both hull decay and the disadvantages of creosote, Norman C. Bray of the U. S. Engineers, Portland, designed a 70′ x 21′ x 5′ prefabricated wooden barge in 1936, specifying pressure-treated Wolmanized Douglas fir throughout.

It was purposely decided to give the material very harsh treatment—encouraging possible decay, leaching of the preservative, and corrosion of metal fastenings. To this end, the barge was left unpainted; black iron instead of galvanized bolts and fastenings were used; hatch covers were to be kept closed indefinitely.

In 1939, when the barge was lifted on the Port of Portland dry dock, it was inspected by Mr. Bray and by its builder, Joseph M. Dyer, manager of the Astoria Marine Construction Co., who reported:

"Hatches were raised for the first time since delivery. There was no sign of either fungus or decay at any point. Even the stale musty smell, usually present in a closed vessel, was not observed and the bilges were sweet and clean. Exposed heads of the black iron bolts were damp and rusty, and the steel knees had begun to rust in spots, although they had been carefully red-leaded during construction. The entire interior was damp due to lack of ventilation, but the timber was in perfect condition. The usual prodding with a sharp knife failed to expose any soft spots.

"Externally, except for wear and tear, the condition was also excellent. Some of the rake planks and guards had been badly chafed and worn and needed replacing. The lower caulking seams were firm, hard, and in perfect condition. A slight amount of shrinkage (less than normal) made it advisable to horse the upper gunwale seam, but additional oakum was not required. All parts removed for repairs were closely examined. No wood discoloration other than that resulting from the original treatment was observed around the fastening holes. The spikes looked as if they had just come from the keg. They held very well, in fact were hard to pull, yet there was no indication of 'rusting in.' The plank edges were in perfect condition and the caulking seam looked new. The first thread of caulking was cotton followed by two threads of oakum. The cotton showed no discoloration save for a yellowish tinge taken from the surface Wolman salt residue. This apparently acted as a preservative for the cotton as it was in excellent condition, as was the oakum."

Last month when the barge was cut in half to reduce its length for Navy use, it was inspected again. Its condition as reported in 1939 was practically unchanged.

WOLMANIZED LUMBER BARGE, U. S. ENGINEERS

Protection Against Flying Glass

Experience in the much bombed cities of England has shown very conclusively that more air raid casualties are directly attributed to flying glass than to any other single cause. To guard against this danger, British chemical engineers set themselves to develop a coating for glass which: would be transparent or sufficiently translucent, so as not to interfere with vision; would prevent shattering and projection of fragments when the glass was subject to sudden great pressures; would be impervious to heat and moisture; and would hold its adhesive properties and tensile strength over long periods of time.

The best results of this research was a glass coating which is marketed under the trade name of Garinol. This product is approved and used by the British Government, and has proved its effectiveness under the most severe bombing conditions. Windows coated with Garinol will crack under violent concussion but will not splinter. If the pane is completely cracked, the glass will still hang in the frame and none will blow into the interior of the structure.

Garinol is applied with a brush, just as if it were paint. It dries on the glass with a hard transparent surface that can be washed just as the glass is

(Page 109, please)

Losses From WAR-RISK INSURANCE

ALTHOUGH WAR-risk insurance losses on shipping in the first five months of 1942 have been heavy, the aggregate loss to insurance companies through their participations in the American Cargo War-Risk Reinsurance Exchange and the American Marine Insurance Syndicate, covering the entire period of war-risk insurance from its inception in June, 1939, through May 31, 1942, amounts to $1,453,690. To this unfavorable balance must be added administrative expenses, taxes and other charges incurred by the individual member companies and properly chargeable to this business.

This was disclosed on June 10 with the first official publication by the American Institute of Marine Underwriters of the combined results of the war-risk insurance operations of the exchange and the syndicate, covering insurance on both cargoes and hulls for the three-year period, June, 1939-42. The figures of these two organizations, made public by Henry H. Reed, chairman of the Information Committee of the Institute, are shown herewith.

War-Risk Premium Income (after deducting returns, reinsurance premiums, reserves, commissions and exchange and syndicate expenses)	$140,125,180
War-risk losses incurred	141,578,870
Debit balance	$1,453,690

This debit balance is spread among approximately 140 companies, which, on December 31, 1941, reported aggregate capital, surplus and special reserves of $1,174,622,000. Cash and holdings of Government securities of these companies aggregated $693,661,000 as of that date. In the case of foreign companies, figures included are only those of U. S. branches.

While the members of the exchange and the syndicate are not identical, their numbers are about the same and altogether they do all but a small portion of the private marine insurance business in the American market. Total written premiums covering all classes of business of all member companies of the exchange and syndicate for 1941 amounted to $813,398,000, of which ocean marine (including war-risk and other classes of marine insurance) amounted to $117,090,000, or 14.4 per cent of the total. War-risk insurance alone in 1941 constituted less than half of the total ocean marine business.

Until the beginning of this year the exchange and the syndicate had a substantial credit balance from operations. This favorable balance of war-risk premiums over war-risk losses distributable to members as of December 31, 1941, however, has been offset in the first five months of this year by an unfavorable debit balance of approximately the same amount, as shown in the figures herewith.

The war-risk insurance experience is held to be typical of other insurance operations, where occasional heavy losses from floods, fires, hurricanes and other disasters are met from surpluses built up in previous years.

The favorable credit balance distributed to members for the period ended December 31, 1941, was subject to administrative expenses, taxes and other charges in amounts varying with individual circumstances. Consequently, this entry cannot be considered as an offset to the unfavorable balance of the first five months of 1942. Because of the different positions of individual companies, it is impossible to strike an average figure applicable to all companies for taxes, administrative expenses and other charges.

Since April 1, the War Shipping Administration has assumed an increasing proportion of the war-risk hull insurance until, at this time, the syndicate is doing virtually no war-risk hull business. Practically the only business left to the syndicate is a diminishing liability on long voyages not yet completed, nearly all accepted prior to April 1, and against which unearned premium reserves have been set up.

As to cargo business, the commercial underwriters are still writing and clearing through the cargo exchange a large volume of war-risk insurance on cargoes. Rates for this type of business are considered from day to day and adjusted as necessary to reflect the changing conditions of risk, and in the judgment of underwriters are now adequate to meet present-day conditions.

	June, 1939-Dec. 31, '41	*Jan. 1-May 31, '42*
Premiums included after deducting returns, reinsurance premiums, reserves, commissions and exchange and syndicate, expenses	$85,252,364	$54,872,816
War-risk losses incurred	40,219,986	101,358,884
Balance (credit)	$45,032,378	
Balance (debit)		$46,486,068
Net debit balance for entire period		$1,453,690

WAR LOSS Experience, June, 1939-June, 1942

MARINE DEPARTMENT
AETNA INSURANCE CO.
QUEEN INSURANCE CO.
MARITIME INSURANCE CO., LTD.
FIDELITY PHENIX FIRE INS. CO.
Commercial Hull Dept.
AUTOMOBILE INS. CO.

MATHEWS & LIVINGSTON
Marine Underwriters
200 BUSH STREET · · · · SAN FRANCISCO
Offices at: Colman Bldg., Seattle · 111 West 7th St., Los Angeles

WHO'S WHO

(Continued from page 68)

Beatty M and M Elects Directors

The following officers were elected recently at a meeting of the board of directors of the Beatty Machine and Manufacturing Company, Hammond, Indiana.

W. R. Beatty, founder of the company, was elected chairman of the board; **L. C. Beatty** was elected president; **P. H. Beatty,** vice president. Other officers elected were **Charles Aaron,** secretary; **W. Perz,** treasurer; and **Miss C. Kasten,** assistant secretary and treasurer.

John Hulst Retires

John Hulst, vice president of United States Steel Corporation and one of the best-known engineers in the steel industry, retired July 2 upon completion of more than 40 years of association with United States Steel Corporation and its subsidiary companies.

A veteran of the period of the steel industry's greatest development, Mr. Hulst was active in U. S. Steel's extensive program of plant modernization.

Day Joins Unibestos

Chas. L. Day has become associated, as marine specialist, with Rudolf Wild, Eastern representative of the Union Asbestos and Rubber Company, manufacturers of Unibestos pipe covering and Insubestos felt.

As manager of the Navy and Marine Department of the Owens-Corning Fiberglas Corp. for the past six years, Mr. Day has been stationed both at New York and Washington.

STEADY AS YOU GO

(Continued from page 77)

cludes batteries to supply current to the hydrophone receivers, are usually located in the wheelhouse of the ship or in the chart room. The indicator unit controls the operation of the oscillator, which in turn produces the sound waves. The time interval between the emission of the sound and the return of the echo are then translated into the depth of water under the ship and visual indication appears in the form of a flash of light on the Fathometer dial opposite the number corresponding to the depth at each instant.

The amplifier transforms the sound echoes as received from the hydrophone into electrical impulses of sufficient strength to cause the light to flash on the indicator dial.

The oscillator, or sound producer, is mounted in the bottom of the ship, and is usually suspended in a tank of water. The sounds which are produced by the oscillator are of sufficient intensity and strength to pass from the bottom of the vessel to the ocean floor and to return in the form of an echo and to actuate the Hydrophone.

The Hydrophone receiving apparatus is also located in a water-filled tank at the bottom of the ship. This is the sound receiver, and its function is to pick up the returning echo and transmit it by electrical impulses to the amplifier and thence to the indicator in the wheelhouse or chart room.

This instrument is now accepted as a standard piece of navigation equipment and is to be found on almost all new vessels of our rapidly expanding merchant marine. It is simple to operate and reliable in its results attained. The instrument is started by the turning of a switch; once started and regulated, it can be left running and a continuous sounding will be taken, indicating, not the depth of the water below the surface, but the more important depth of water *under the ship*.

The advantages of the Fathometer over the sounding machine are manifold, to mention a few of the most important:

1. The navigator can visually observe the depth measurements below the vessel's keel.
2. Indications shown on the indicator dial are accurate and instantaneous, regardless of the vessel's speed.
3. Automatic operation and elimination of human errors.
4. By being easy and simple to operate, it induces the desire to take soundings when approaching the coast.
5. The apparatus is entirely independent of any signals from shore stations.

By the use of a continual sounding, the navigator can, while in fog and proceeding along a surveyed coastline, know with certainty whether or not he is in dangerous waters. Should a distinct depth curve be shown on the chart, and if this depth curve is running in the general direction of the vessel's course, it is obvious that the mariner could readily determine whether or not he was being set off his course by the wind, tide or currents.

Fathometer Depth Recorder

This is a unit placed close to the indicator in the chart room or wheelhouse and is mechanically connected to the indicator. It will automatically record on a paper chart the depth of water which is simultaneously indicated by the Fathometer.

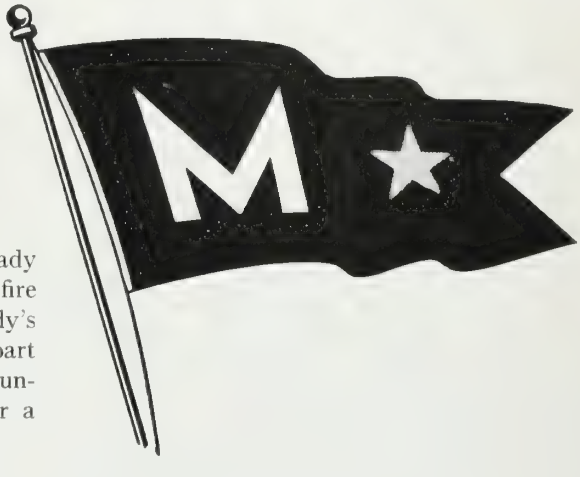
Approximately 24 readings per minute will be recorded on the chart.

The permanent record of the soundings so obtained is a valuable supplement to the vessel's log book. These records will often be of help on a subsequent voyage over the same route. Together with the record of the vessel's course, they will also be rather conclusive evidence as to the previous route traversed by the vessel, and should collision or stranding occur, the courts are inclined to look with favor upon the record shown on the papers.

Maintenance of the Fathometer installation is confined practically to the renewal of the vacuum tubes and dry cells in the amplifier from time to time. All parts are rugged and so designed as to give continuous service with ordinary care. Installations are placed so as to be out of the way and free from accidental injury.

Joshua Hendy wins Award

Management and Employees Honored by Maritime Commission



One of the miracles of industrial expansion which have characterized America's effort to equip herself for war was climaxed July 23, when the United States Maritime Commission awarded the coveted Maritime "M" to the Joshua Hendy Iron Works of Sunnyvale and Long Beach, California.

Admiral Howard L. Vickery, Vice Chairman of the Maritime Commission, presented the Maritime "M" Burgee and the Maritime Victory Flag to the company, and Maritime Merit Insignia Badges to its employees at a colorful ceremony on the company's grounds at Sunnyvale, while the personnel at Long Beach "listened in" over long distance telephone and a public address system.

The romantic background of the Hendy company, reviewed during the ceremony, intensified interest in the event. Joshua Hendy opened a small, one forge shop in San Francisco in 1856 when the gold rush was at its height and settled down to making tools and machines for gold miners and anyone else who needed them.

The establishment enjoyed steady progress until 1906, when the great fire wiped it out. One of Joshua Hendy's nephews, who had come into part ownership, had a fruit orchard at Sunnyvale which became the site for a

"The Difficult Thing Can Be Done Right Away

—the Impossible May Take a Little More Time"

Left to right: Admiral H. L. Vickery, Vice Chairman of the United States Maritime Commission; Carl Flesher, West Coast Director of Construction for the Maritime Commission; C. E. Moore, president, Joshua Hendy Iron Works, and Felix Kahn, vice president, on a trip through the Hendy plants at Sunnyvale, preceding the award of the Maritime "M" to the company.

The Maritime "M" Burgee and the Maritime Victory Flag, awarded the Joshua Hendy Iron Works for outstanding achievement in the production of engines for the Nation's Victory Fleet—raised aloft by four veteran employees of the company at a signal from Admiral H. L. Vickery, Vice Chairman of the United States Maritime Commission, who made the award. The presentation ceremony was held July 23, 1942, on the company's grounds at Sunnyvale, and transmitted by long distance telephone to the officers and employees of the Long Beach plant. Admiral Vickery is the uniformed figure just to left of the flagpole. The ceremony was broadcast over KGO of the Blue Network.

larger plant. It built up a substantial volume of business and an enviable reputation for quality.

Came World War I and with it a contract to build engines for cargo ships. Post-war business was good, but the depression hit the modest plant hard. It was readily available to Chas. E. Moore, now president of Joshua Hendy Iron Works, and his associates, who took it over to build engines for the Maritime Commission late in 1940. Since then, under Mr. Moore's dynamic direction, the floor space has increased 600 per cent and is still growing. This year the firm will do more business than it did in the 85 previous years of its existence.

In presenting the Maritime Commission's award, Admiral Vickery referred to the company's achievement as one of the most amazing examples of sound organization and efficient operation in his experience. "Eighteen months ago," he said, "shipping was the bottleneck of war production, and engines were the bottleneck of shipping. Today, engines for Liberty ships being constructed in Pacific Coast shipyards are being turned out by Joshua Hendy Iron Works as fast as the ships are ready for them. And they are good engines. No Hendy engine has ever failed on any ship on any trip.

"Last year it was plain that, in addition to Liberty ships, we had to have faster vessels built on the Pacific Coast. Shipbuilders said it couldn't be done because they couldn't get the turbines. Last fall, I asked Mr. Moore to add turbines to his output. I've just been through the plants here. To my amazement, I saw a turbine plant already built and partly equipped that will be turning out turbines in a matter of weeks. And I'll stake my reputation that they will be good turbines, as good as Hendy engines."

In accepting the award of the Maritime "M," President Moore paid a warm tribute to the Maritime Commission and its willingness to cooperate with war industry plants to the fullest degree. He referred to the tragic cry that went up from the men on Bataan, "Where is the fleet?" and said that it was his resolve and that of every member of the Hendy organization to do everything in their power to prevent any occasion for any such cry again. "The cost of this war will be computed not in dollars but in lives. The sooner we produce the equipment necessary to win and end it, the fewer lives we will have to pay."

Carl Flesher, West Coast Director of Construction for the Maritime Commission, was the first speaker on the presentation program. He voiced congratulations to the company and its employes. He was followed by Governor Culbert L. Olson, who, after congratulating the organization on behalf of the people of the state, said in part:

Admiral H. L. Vickery, Vice Chairman of the U. S. Maritime Commission, formally presents the Maritime "M" Burgee (pennant) and the Maritime Victory Flag to the Joshua Hendy Iron Works and the Maritime "M" Insignia to the employees—"for outstanding achievement in production."

Charles E. Moore, President, accepts on behalf of Joshua Hendy Iron Works, the Maritime "M" Burgee and the Maritime Victory Flag awarded by Admiral H. L. Vickery, Vice Chairman of the U. S. Maritime Commission.

"The achievement of this important industrial plant, I sincerely hope, will become characteristic of all war production plants in this state. The Pacific Coast shipbuilding program is the greatest in the United States. In reaching the objectives of this program, as well as in California's production of planes and other necessary instrumentalities for carrying on this war, the industrialists and workers of California are exhibiting the highest degree of patriotism and of earnest endeavor to surpass the schedule set for them, as you at the Joshua Hendy Iron Works have done."

Joseph S. Thompson, president of Pacific Electric Manufacturing Company, acted as master of ceremonies at the presentation. As Admiral Vickery began his address, four veteran employees of the company stood at attention. They were J. M. Brown, in the employ of Hendy since 1907; Manuel Dutra, since 1909; James Miglio and William C. Theller since 1907, an aggregate service of 138 years. At a signal from Admiral Vickery they raised the Maritime "M" Burgee and the Maritime Victory Flag on a pole topped by the Stars and Stripes, while the "Victory Fleet Song" of the Maritime Commission was played and sung by the Joshua Hendy Iron Works band and chorus.

Later, all four veterans were personally presented with the Maritime Merit Insignia Badge by Admiral Vickery. The Admiral also presented it to Morris Levit, whose 53 years of service make him the company's senior employee. Mr. Levit and Mr. Dutra responded in behalf of the personnel at large.

H. C. Gunetti, general superintendent, followed Mr. Moore with a brief word of acceptance on behalf of the company.

The initial award of the Maritime "M" is for a period of six months. At the end of that time, if the standard of performance has been maintained or augmented, the company is permitted to add another gold star to the "M" Burgee.

From left to right: J. M. Brown, Manuel Dutra, James Miglio and William C. Theller, four veteran employes of Joshua Hendy Iron Works, whose service aggregates 138 years, prepare to raise the Maritime "M" Burgee at the ceremony July 23, 1942, at Sunnyvale, California, at which Admiral H. L. Vickery, Vice Chairman of the U. S. Maritime Commission, presented the award to the company for outstanding achievement in the production of engines for the Nation's Victory Fleet.

Launching Program

"S. S. Joaquin Miller"

July 22, 1942

6:30 P. M.	Music, Shipyard Band
6:35 P. M.	Invocation Commander Harry M. Peterson, Chaplain, Twelfth Naval District
6:37 P. M.	Acceptance of delivery of the "Ocean Victory" By Mr. F. C. Cocks, resident representative of the British Purchasing Commission, from Mr. C. P. Bedford, general manager of the Richmond Shipyards
6:39 P. M.	Introduction of Admiral H. L. Vickery Vice-Chairman of the United States Maritime Commission, and presentation of the Maritime "M" Burgee of Merit
6:42 P. M.	Acceptance of the "M" Burgee of Merit Charles H. Day, Assistant General Manager of Richmond Shipyard Number One
6:43 P. M.	Introduction of Mr. Henry J. Kaiser, Sr. President of Richmond Shipyards
6:47 P. M.	Introduction of Mr. Carl W. Flesher Director of the United States Maritime Commission, Pacific Coast Regional Office
6:51 P. M.	Introduction of Sponsor, Mrs. Carl W. Flesher and presentation of flowers
6:54 P. M.	Message from Admiral Vickery Vice-Chairman, United States Maritime Commission
6:58 P. M.	Music
7:00 P. M.	Launching of "S.S. Joaquin Miller"

AWARD OF MERIT BY THE UNITED STATES MARITIME COMMISSION HONORING EACH WORKMAN OF RICHMOND SHIPYARD NUMBER ONE OF THE PERMANENTE METALS CORPORATION

For Merit In Shipbuilding

The prized "M" burgee of the United States Maritime Commission was raised with pride by the workmen of Richmond Shipyard Number One on Wednesday, July 22.

The burgee, blue with a white block "M" and a gold star, is presented by the U. S. Maritime Commission for outstanding performance in the construction of cargo vessels. It was presented formally by Rear Admiral Howard L. Vickery, vice chairman of the United States Maritime Commission.

Combined with the presentation ceremony was the launching of the *Joaquin Miller,* second Liberty ship to go down the ways at Richmond Shipyard Number One.

Mrs. Carl W. Flesher, wife of the Pacific Coast Regional Director for the U. S. Maritime Commission, was sponsor. Her friend, Mrs. Charles G. Cox, was matron of honor.

Acceptance of delivery of the *Ocean Victory,* last of the thirty-ship fleet for Great Britain, was made by F. C. Cocks, senior surveyor for Lloyd's Registry of Shipping and residential chief of the British Purchasing Commission.

Admiral Vickery presented the "M" burgee to Charles H. Day, assistant general manager of Richmond Shipyard Number One.

Henry J. Kaiser, Sr., spoke to the workmen in climax to one of the most important and spectacular days in the history of the war workmen of the Richmond Shipyards.

PMR goes t

Acting Secretary Ned Gunderson took care of reservation details. Here he is seen putting John Cordes in his proper place (table No. 1), while George Lacy (right) ponders "When do we eat!"

C. M. "Dad" Le Count (left) has just introduced G. E.'s R. W. Beard (standing) to Frank De Pue (with the inevitable cigar). G. S. Vaitses of the U. S. M. C. is the personable chap (center)

Edw. J. Schneider of Moore Dry Dock Company arrives early with Nat Levy (vice president of the Oakland shipyard. That's Nat, lower left.

Mariners President Capt. A. T. Hunter and our favorite spark plug Dick Glissman (who serves in silence). Skipper Tom and Dick collaborate for a bell-ringing jamboree.

he MARINERS PARTY

Last Thursday evening your scribe hitch-hiked out to Hunter's Point to attend the Annual Banquet and Hi-Jinks of the colorful Mariners Club of California. "A goodly crowd was there!" The locale was Mary's Venetian Villa, famous for epicurean delights. Those who came to eat were not disappointed. Those who came to enjoy a good show were loud in their praise of Chairman Glissman's selection of talent and beauty (which supplemented Mary's floor-show).

Those who came aboard merely to meet the gang had a wonderful time . . . which, in the opinion of your chronicler, will go down on the records as comparable with the long succession of previous events.

This is the same organization, our readers will remember, which staged the famous party at the Fairmont Plunge back in the days of Andy Volstead.

Salvos of praise were heaped upon the Club's president, Capt. A. T. Hunter, and his right-hand bower, Dick Glissman. The smoothly working committee in charge of the details did an excellent job and deserve the PMR Merit Award!

Glimpses of the boys photoed before the call of "Come and get it!" Upper view shows Clyde Williamson's sextette. That's Dave Erikson second from the left. The Hagan vice president came farthest to attend the merry-making . . . clean from Pittsburgh! Others you can identify are Tom Short, Sewell A. Knapp, Bern DeRochie, John Cordes, Joe Gisler, et al.

Navy "E" over ESCO

Production Award given to Electric Steel Foundry at Portland

The Secretary of the Navy, Washington, D. C., on May 20, addressed C. F. Swigert, Jr., president, Electric Steel Foundry Company, 2141 North West 25th Avenue, Portland, Oregon, as follows:

Dear Mr. Swigert:

To give full credit where it is justly due is one of the fundamentals of the Naval Service. It is, therefore, my duty, as well as my great pleasure, to advise you that the Electric Steel Foundry Company has been selected by the Navy Board for Production Awards to receive the Navy "E" for excellence in industrial production.

For almost forty years the "E" has been the Navy's symbol of a job well done. I can think of no honor more highly respected among the officers and men of the Fleet.

In token of the service your company has rendered the nation, you now have the right to fly the Navy "E" pennant over your plant. Your fellow-workers in the offices and at the machines are privileged to wear the Navy "E" lapel insignia.

Our battle-fronts are not only on foreign soil. We have a battle-front right here—the battle for production of war materials. Congratulations to you and your soldiers of production for your significant contribution toward winning this increasingly important home battle. Keep up the good fight! For in this most critical war in our nation's history, the first great victory must be won on the line of supply.

Yours sincerely,

FRANK KNOX.

On July 9, the pennant was formally presented by Rear Admiral C. W. Fisher, who represented the Secretary of the Navy at the plant, where the occasion was celebrated by all the employees and many prominent guests. Among the latter were: Governor and Mrs. Charles A. Sprague, Acting Mayor, Commissioner William Bowes, Gen. Charles H. Martin, Nan Wood Honeyman, Mr. and Mrs. Fred Swigert, Mr. and Mrs. Ernie Swigert, Mrs. C. F. Swigert, Sr., Mr. and Mrs. Austin Flegel, Mrs. C. W. Fisher, Margurite Roeschle, Arthur Dew and Frank Warren, the three latter being representatives of ESCO employees.

Mr. Austin Flegel of Willamette Iron and Steel Corporation acted as master of ceremonies, introducing first Commissioner Bowes, who delivered

THE "E" PENNANT was formally delivered into the hands of ESCO's President Fred Swigert, Jr., by Rear Admiral C. W. Fisher.

REAR ADMIRAL C. W. FISHER delivers an inspiring address prior to presenting the coveted Navy "E" pennant.

"The skilled workmen, metallurgists and technical men who have made it possible for us to tackle the tough jobs of peacetime are now making it possible for us to successfully accomplish the tough jobs of wartime which the Navy has called upon us to do.

"We are proud of our 'SOLDIERS OF PRODUCTION' and their doubled and redoubled efforts. We recognize the Navy 'E' award as a CHALLENGE TO EVEN GREATER EFFORTS."

—FRED SWIGERT, JR.

the address of welcome to Admiral Fisher.

Governor Sprague of Oregon followed with an address, in which he said the pennant is an emblem "that workers everywhere are striving for. It is not one which is handed out promiscuously; it is based on real achievement. To be received it must be won, and so you in the offices, and you in the foundry and in other departments of this institution are the ones who, by your efforts, really have earned this award, and I want to compliment you for it."

Admiral Fisher made a forceful and moving presentation speech, a part of which follows:

"This company and the workers of this company, as well as the management, have been in the forefront of development and improvements of its products for a long time. That fact is well recognized and is now being used by this country and the Navy. Well as you have done, well as you are doing now, I call upon you with the utmost solemnity to do more, to do better, to do it today, tomorrow, next week, next month, and next year, and as many years thereafter as necessary. Let no man deceive you. This war is not yet won. It is not going to be over next week, nor next month. The news is bad. Would to God I could bring you a different message. The situation is serious, and this nation is in the most serious position it has ever been in since we won our independence a hundred or more years ago."

The "E" pennant was formally delivered into the hands of President Fred Swigert, and was then raised by the Navy Color Guard. An interesting fact came to light later, that one of these sailors once worked for ESCO. He is H. H. Atwood now stationed on the U. S. S. *Adroit*.

MARGURITE ROESCHLE

receives Navy "E" pin along with being honored as the longest in point of service of all girl employees of foundry.

Fred Swigert accepted the "E" pennant with an address which left those who know Fred gasping. His appreciation was expressed in the following excerpt from his speech:

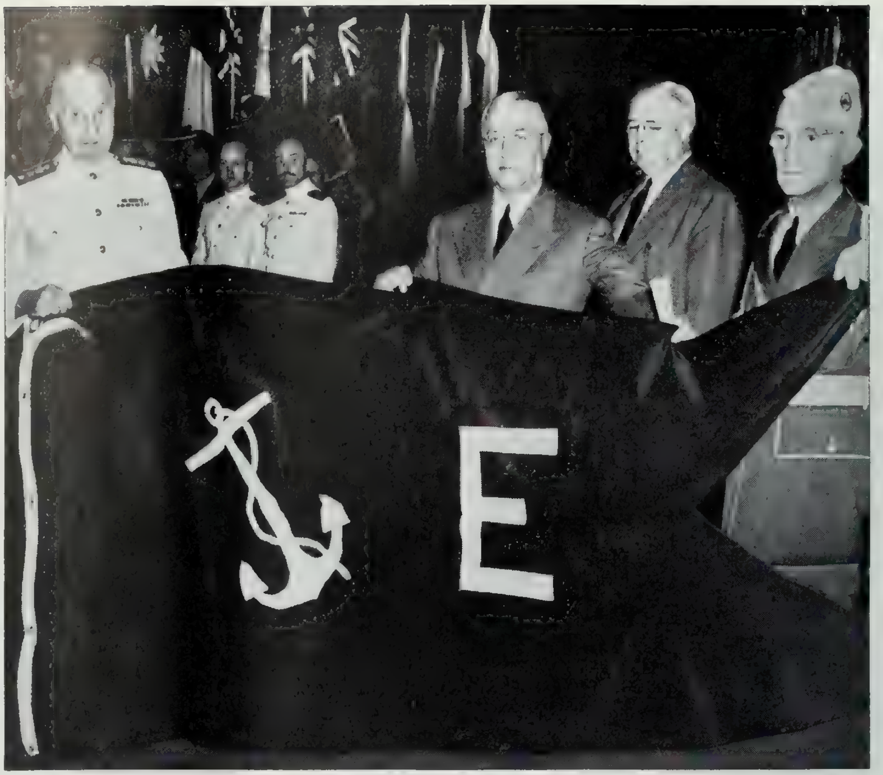
"The things we make are not as spectacular as battleships and airplanes, and I think we have all felt sometimes that people didn't realize how hard we were trying to hold up our end in the battle of production. The fact that our efforts are being recognized in this signal manner brings home to us that the men in control of our Navy are watching every detail of this vast program and are recognizing the achievements of small companies, such as ours, as well as the great plants that produce the final units."

Following Mr. Swigert's oratory, Admiral Fisher made the awards of lapel insignia to Margurite Roeschle, oldest girl employee in point of service; Arthur Dew, oldest man in point of service; Frank Warren, head of the Shop Committee; and to Mr. Swigert's surprise, Admiral Fisher pinned one on him, too.

De Laval Receives Navy "E"

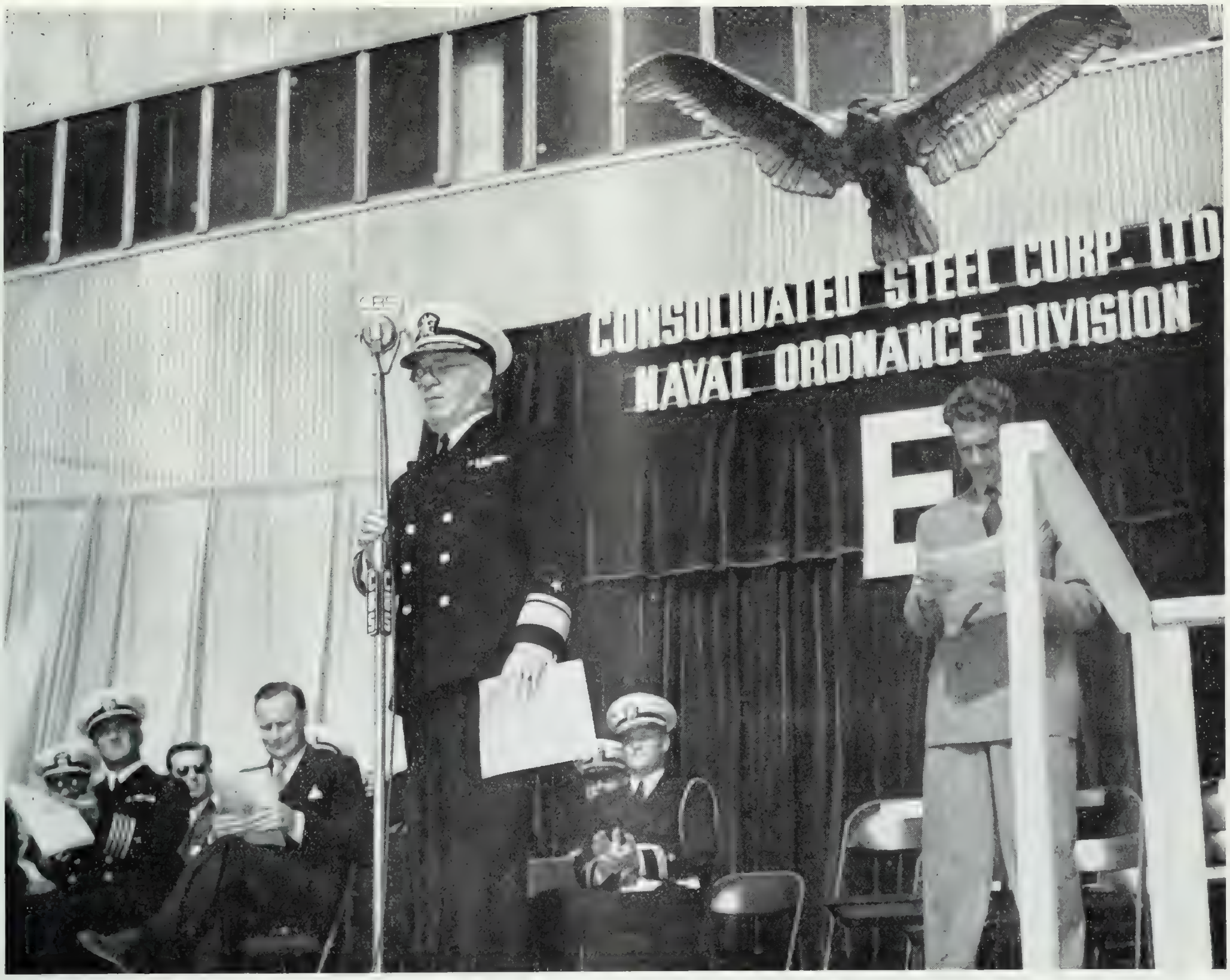
For outstanding achievement in the production of turbines, gears, pumps and other equipment vital to the United States Navy, the Navy "E" burgee, symbol of "Work Well Done," was presented to the De Laval Steam Turbine Company, Trenton, N. J., June 29, 1942, at which time also the employees received the "E" lapel insignia. The presentation speech made by Rear Admiral William C. Watts, U. S. N. (Ret.), was responded to by H. L. Watson, executive vice president of the De Laval Company. Other speakers were the Hon. John A. Hartmann, Mayor of Trenton, and Judge Harold C. Wells, of the Court of Errors and Appeals of New Jersey. The presentation ceremonies were held in the War Memorial Building at Trenton and were attended by about 1800 De Laval employees and invited guests. Among the latter were numerous officers of the Navy and Army and officials of shipyards and concerns manufacturing marine equipment. The presentation ceremonies were followed by a reception and buffet supper at the Trenton Country Club.

To date over eleven million horsepower of De Laval marine turbines and speed reducing gears have been delivered, or are under construction, for the propulsion of destroyers, cruisers and merchant vessels, as well as large numbers of centrifugal pumps for marine service, De Laval-IMO rotary displacement pumps for fuel and lubricating oils, centrifugal compressors for submarines, and worm reduction gears for use with steam turbine-driven auxiliaries. The production of equipment for the Navy by the Company during the first four months of 1942 exceeded in equivalent man hours its entire production during World War I.



Presentation of Navy "E" burgee, showing Rear Admiral Wm. C. Watts, U. S. N. (Ret.), Lieut. (jg) Thomas Dewart, U. S. N. Office of Public Relations, Lieut. J. W. Gessford, U. S. N. Office of Public Relations, Hon. John A. Hartmann, Mayor of Trenton, H. L. Watson, executive vice president, H. W. Johnson, vice president and works manager

George W. Codrington (extreme right) vice president of General Motors and general manager of
Cleveland Diesel Engine Division of General Motors, with the Navy "E" flag awarded to that comp
July 2, by the Navy for efficiency and excellence in producing diesel engines for submarines and
U. S. Navy craft. At extreme left is Commander C. S. Isgrig, U. S. N., in charge of Navy production i
Cleveland District.



All-Navy "E" Awarded Consolidated

AT TOP OF PAGE—

Rear Admiral Joseph R. Defrees, U.S.N. (Ret.), Inspector of Naval Material, speaking during presentation of the All-Navy "E." In the front row are Rear Admiral W. H. P. Blandy, U.S.N., Chief of the Bureau of Ordnance, principal speaker of the day; Alden G. Roach, President of Consolidated Steel Corporation, Ltd.; Chaplain William A. Maguire, Captain, Chaplain Corps, U.S.N., and, standing at the right, Chet Huntley of Columbia Broadcasting System.

Presentation of the All-Navy "E" awarded to Consolidated Steel Corporation, Ltd., at Los Angeles occurred on June 29, with Chet Huntley of Columbia Broadcasting System acting as master of ceremonies. Following invocation and pledge of allegiance offered by Chaplain William A. McGuire, U.S.N., and playing of the National Anthem by the Consolidated Steel Corporation Band, President Alden G. Roach led with opening remarks and was followed by Rear Admiral Joseph R. Defrees, U.S.N. (retired), inspector of Naval Material, Los Angeles. The principal speaker of the day was Rear Admiral W. H. P. Blandy, U.S.N., who presented the "Burgee," the acceptance of the award being by Consolidated's Vice President in Charge of Production, Lloyd R. Earl.

In the photograph showing the speakers' platform, Rear Admiral Defrees is seen at the microphone, and seated immediately at the rear are Rear Admiral Blandy, Lloyd R. Earl, Alden G. Roach and Chaplain Maguire. Standing at the right is Master

General view of the proceedings. All employees of the Maywood plant attended, and many of their wives and children were also present.

of Ceremonies Chet Huntley. Another photograph included here is from the rear of the auditorium, showing a general view of the proceedings. All employees of Consolidated's Maywood plant attended and many of their wives and children were also present.

It is of interest here to state that credit for the remarkable production achievement in Consolidated Steel's Naval Ordnance Division goes to C. W. Crawford, manager of this division; to Captain John Gaylord Church, U. S. Navy (retired), inspector of naval ordnance, and to Lieut. Edward J. Sherry.

Program

Music	Consolidated Steel Corporation Band
Master of Ceremonies	Mr. Chet Huntley *Columbia Broadcasting System*
Introduction of Guests	
Invocation and Pledge of Allegiance	Chaplain William A. Maguire *Captain, Chaplain Corps, U.S.N.*
National Anthem	Consolidated Steel Corporation Band
Remarks	Mr. Alden G. Roach *President, Consolidated Steel Corporation, Ltd.*
Remarks	Rear Admiral Joseph R. Defrees, U.S.N. (Ret.) *Inspector of Naval Materials, Los Angeles, California*
Address	Rear Admiral W. H. P. Blandy, U.S.N. *Chief, Bureau of Ordnance*
Presentation of "Burgee"	Rear Admiral W. H. P. Blandy, U.S.N.
Acceptance of Award	Mr. Lloyd R. Earl *Vice President, Consolidated Steel Corporation, Ltd.*
Flag Raising Ceremony	U. S. Naval Color Guard
Stars and Stripes Forever	Consolidated Steel Corporation Band
Award of the Navy "E" Lapel Insignia to Representative Workers	Captain John Gaylord Church, U.S.N. (Ret.) *Naval Inspector of Ordnance*
Anchors Aweigh!	Consolidated Steel Corporation Band

Above, left: General view of a section of sub-assembly. Gun barrels can be seen in the right-hand side of the picture. Right: Showing the gun mount, with sailors already installed.

The general view down a section of the sub-assembly floor shows many interesting details. Along a main aisle, seen at the right in the photograph, is a line of gun barrels placed for convenient handling in mounting.

A close-up view in another photograph illustrates basic assembly on the twin gun mount minus barrels and slides. The twin guns in position on the mount are shown in the front view of this equipment.

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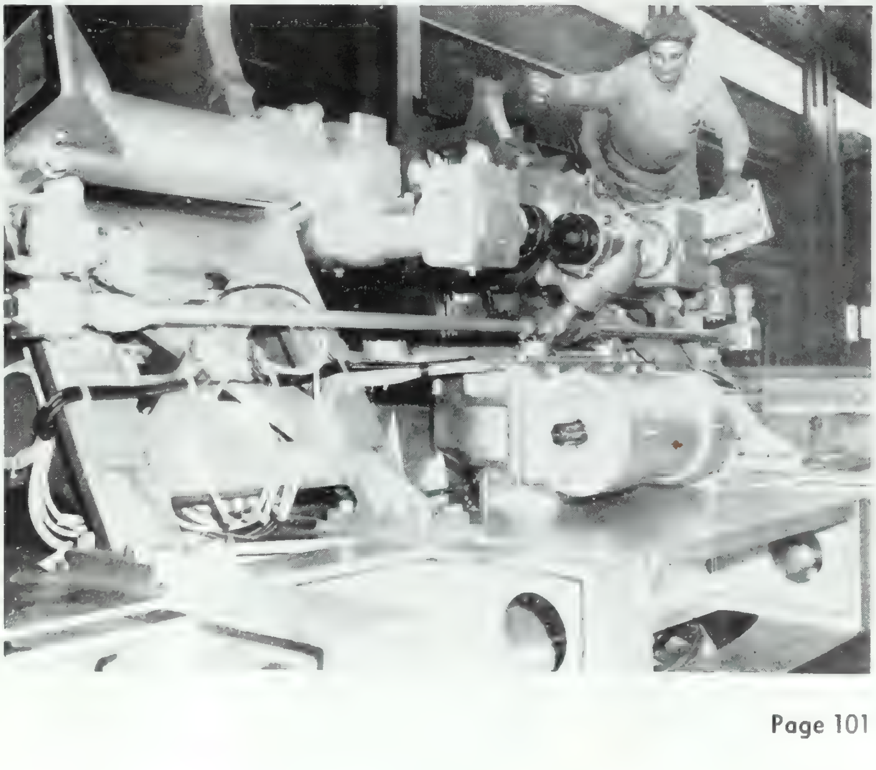


Basic assembly on the twin gun mount, minus barrels and slides.

Martin-Parry Corporation Selects Coast Representative

The Crossfield Products Corporation of Los Angeles, California, has been appointed sales representative of the marine department of the Martin-Parry Corporation of York, Pennsylvania. Crossfield will cover all West Coast shipyards in the interest of this eastern concern's bulkhead, ceiling and lining installations on cargo ships for the Navy and the Maritime Commission. The Martin-Parry line already enjoys a heavy volume of business in the coast yards and has full acceptance of the Maritime Commission.

From bodies to bulkheads via the sheet metal route is the story of this old concern which dates back to the Martin Carriage Works and after that to the truck body prior to the sale of its Indianapolis plant to General Motors. Its executives then started the development of the Metlwald partitions which are absolutely alone in their field on versatility, utility and appearance. These are, of course, the background of their ship installations.

The management very early concentrated upon the armament work and as early as January, 1941, were written up in *Fortune Magazine* as the first "war baby." From that time on they have concentrated principally upon the great shipbuilding program while, of course, utilizing the balance of their plant equipment for ordnance work. For the past two years they have been heavy contractors on ship interiors as well as for complete joiner contracts on many vessels. Their product is well engineered, scientifically produced and erected, and their sales organization is staffed with experienced men who have come up in the marine field. Their latest addition on the West Coast is a good example of their high type sales organization.

Through the use of certain formulas acquired from a British engineer, Crossfield Products Corp. pioneered the development of latex type decking in the U. S. A.

Since the summer of 1938, the product has been marketed under the trade name of Dex-O-Tex and has been extensively used by the U. S. Navy and Maritime Commission.

Crossfield Products Corp. handles all its materials through carefully selected decking concerns whose personnel has been trained to properly lay Dex-O-Tex.

Crossfield Products Corp. has since its beginning closely adhered to a high code of business ethics and as a result enjoys a most favorable reputation in the shipbuilding industry and with the various Federal agencies at Washington.

•

Mrs. Carl W. Flesher, sponsor, and Joseph A. Moore, at the launching of the U. S. S. Flying Scud under construction for the United States Maritime Commission by the Moore Dry Dock Company, Oakland, Calif., July 1, 1942.

Launching of the "Flying Scud"

Mrs. Carl W. Flesher, sponsor, and friends at the launching of the U. S. S. Flying Scud. Left to right: Charles G. Cox, Mrs. Charles G. Cox, Mrs. Jos. A. Moore, Mrs. Carl W. Flesher, sponsor, Mrs. Deryck W. Fernhout and Miss Mary B. Fernhout.

New Directing Head Of Los Angeles Shipyard

Walter Barnett, former submarine boat official and technical-financial advisor to the United States Shipping Board, has taken over the position of operating manager in charge of the Los Angeles Shipbuilding and Drydock Corporation at Los Angeles Harbor, San Pedro, California.

The new directing head of this important shipbuilding and repair yard has had a long and interesting career.

During World War I Mr. Barnett was operating manager of the Lake Torpedo Boat Company, Bridgeport, Connecticut. Following the war he represented private shipbuilding firms in connection with settlement of Government contracts, later operating for a number of years his own combustion engineering firm, with headquarters in Washington, D. C.

In 1930 he was appointed Director of Construction and Finance of the United States Shipping Board. In 1935 Mr. Barnett organized the Procurement Division of the Works Progress Administration.

Born in Texas, he was graduated from Annapolis in 1908. Mr. Barnett also holds a degree in engineering from the New York State University, and is a member of the Society of Naval Architects and Engineers.

Four years after his graduation from Annapolis, Mr. Barnett resigned his commission to engage in the raising of pure-blooded livestock in Kentucky, near Lexington.

Mr. Barnett was formerly assistant general manager of the marine department of the Babcock and Wilcox Company. He joined Babcock and Wilcox in 1936.

We note from the current issue of *The Shipbuilder,* this busy San Pedro yard's own publication, that Mr. Barnett's initial statement of policy has won the immediate respect of his co-workers. He outlined a general policy wherein "management notices" shall take the place of "executive orders."

This announcement has served to bring about a spontaneous cooperation on the part of the leaders and workers throughout the organization.

WALTER BARNETT

STATE OF CALIFORNIA
CALIFORNIA MARITIME ACADEMY
OPERATING
Training Ship GOLDEN STATE
July 10, 1942

PACIFIC MARINE REVIEW
San Francisco, Calif.

Gentlemen:

There is being sent to you under separate cover a copy of the Annual *Hawsepipe,* publication of the graduating classes of 1942, California Maritime Academy.

It is largely due to your interest and generosity that this publication was made possible. We wish to express our appreciation therefor. We feel that these California lads, now sailing so shortly on the bridges and in the engine rooms of our merchant ships, will treasure their *Hawsepipes* and will not forget the people who gave them a helping hand in its publication.

Sincerely,
CLAUDE B. MAYO
Captain, USN (Ret.),
Superintendent.

Marinship Broadcast

The transition from peacetime occupations to jobs in war production was dramatically portrayed in a nationwide broadcast over the Blue Network at 8:30 p.m., Thursday, July 2, when a portion of "This Nation at War" program originated in the Marinship training school at Waldo.

Trainees from various walks of life appeared on the program with K. K. Bechtel, vice president in charge of the Marin Shipbuilding Division of the W. A. Bechtel Co.

Participants in the unusual program included Fook Yow Fong, a native of Canton, China, and a plumber by trade, now learning welding; Hal Speers, deputy sheriff nurseryman, who is learning chipping; Henri de Geofroy, young French artist who has deserted his canvasses for the art of arc welding, and John Scott of Mill Valley, former Wyoming cowboy giving up boots and saddle for a welding rod.

Lutz Made Vice President

Mr. E. Russell Lutz, executive assistant to the President of the American President Lines, has been elevated to the position of vice president, executive department, according to an announcement released recently by Dr. Henry F. Grady, president of the company.

Mr. Lutz' prior experience in Washington, first with the Department of State and then with the U. S. Maritime Commission, has particularly qualified him for the many problems with which the industry has had to cope as a result of the war. Consequently his advance in the San Francisco shipping scene has been well merited.

Lutz came here from Washington early in 1941 as assistant to President Grady. February last he was made executive assistant to the president, and a few weeks later was elected to the board of directors and made a member of the company's executive committee. His elevation to the vice presidency is hailed by his colleagues as a well-deserved promotion.

E. RUSSEL LUTZ

In other phases of the industry, as well as in the business life of San Francisco generally, Mr. Lutz has been making his counsel felt. He is a vice president of the Pacific American Steamship Owners Association, a member of the board and chairman of the association's legislative committee. He is also a member of the foreign trade committee of the San Francisco Chamber of Commerce and a member of its legislative committee.

◆

BERRY E. DUNN
RIALTO BUILDING
SAN FRANCISCO

July 1, 1942

PACIFIC MARINE REVIEW
San Francisco, Calif.

Gentlemen:

The U. S. Army took over the entire building where my office was located (444 Market Street) and in the urgency of moving at the time a new telephone directory went to press and my name was omitted from the May directory. I have taken an office at the Rialto Building in San Francisco and the telephone number is YUkon 2502. Please make a note of the address and phone number for future reference.

The Kearfott Engineering Co. of New York, whom I represent, are the largest manufacturers of windows and pendulum window wipers for marine use in the United States, and these articles are standard with the Maritime Commission and the U. S. Navy. They are also the United States representatives of Lockwood and Carlisle, manufacturers of patented piston rings for marine engines. Several sizes of rough-turned H.P. piston rings are carried in stock at San Francisco for immediate delivery.

I would be pleased to serve you in the future, as I have done in the past.

Yours very truly,
BERRY E. DUNN.

HARRY W. PARSONS

Assistant manager, Marine Department of Foster-Wheeler Corporation, in active charge of all major marine boiler sales, is spending more and more time out on the Coast, because of the "westward trend" in shipbuilding. And rightly so, as Harry and his parents before him are native Sacramento Californians. He is justifiably proud he was in on the creation of The Propeller Club of the U. S.—as founder and first president. PMR hails him as a fellow-scribe . . . for he is editor of the Marine Square Club bulletin of New York.

G-E Schenectady Works Gets Navy "E"

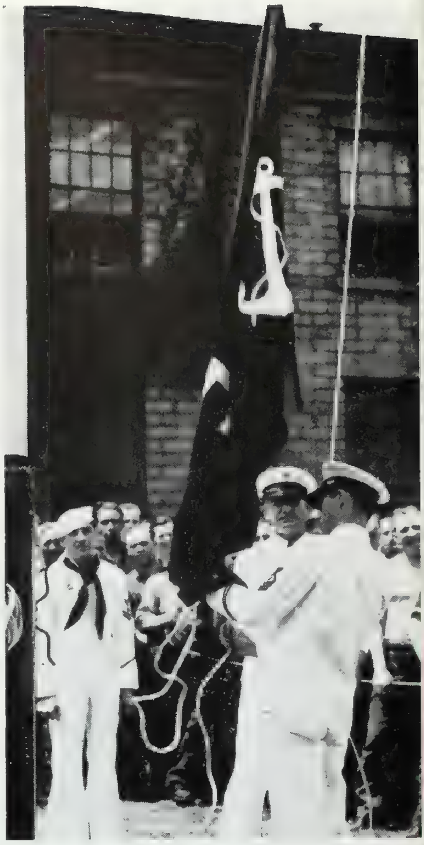
The Navy "E," symbol of excellence in furnishing material for the U. S. Navy, has just been awarded to the General Electric management and employees of the Schenectady (N. Y.) Works, according to Mr. Raymond M. Alvord, commercial vice president of the company.

The company is producing a wide variety of important operating and fighting equipment for the Navy, including big propulsion sets, auxiliary power generation equipment, searchlights, switchgear and protective devices, lighting and other electrical accessories.

Chairman of the Navy board of production awards, Rear Admiral W. T. Cluverius, U. S. N. (Ret.), made the presentation of the Navy "E." The blue pennant, bearing an anchor and the letter "E" will fly for six months. At the end of that period production is reviewed, and if the same standard that originally won the award is maintained, a service star will be added.

The presentation took place in a noon-hour ceremony, after the Navy color guards, escorted by bands, paraded to the platform from each end of the works. In honor of the occasion the avenue leading to the platform was decorated with 183 pennants, each bearing the name of a Navy warship in service, with propulsion equipment made by General Electric.

Vice President C. H. Lang, chairman of General Electric's war projects committee, was master of ceremonies. After the invocation, he read a message of congratulations from Frank Knox, Secretary of the Navy. Rear Admiral Cluverius made the award.



COLOR GUARD raising the Navy "E" at General Electric Co. plant.

A NAVY "E" FOR EXCELLENCE OF PRODUCTION: The Worthington Pump and Machinery Corporation, Harrison, New Jersey, was awarded a Navy "E" pennant on Friday, June 26th, highlighting 95 years of service to the Navy and the company. Admiral Henry A. Wiley, U. S. N. (Ret.) (left), made the presentation, and Hobart C. Ramsey, vice president in charge of operations at the Harrison plant accepted on behalf of the workers.

Tubbs Cordage Executive Serves WPB

Herman D. Nichols, vice president of Tubbs Cordage Company with headquarters in San Francisco, is on leave of absence for the duration to serve with the War Production Board.

Located in Washington, D. C., Nichols is the Hard Fiber Consultant and a Principal Industrial Specialist of the Bureau of Industrial Conservation. His work will be largely devoted to conservation methods for existing fiber supplies and the development of new fiber sources for war, industrial and civilian use.

The shortage of not only Manila fiber but also of sisal and other types of hard fibers is one of the country's most serious problems, ranking in importance with metal and rubber shortages. Because of this, the War Production Board has recently issued new rulings further restricting the manufacture and sale of sisal rope, which has been found the best available substitute for Manila cordage.

As a consequence of the fiber shortage, Nichols' work in Washington is closely tuned to the war effort in assuring ample cordage supplies for the armed forces, at the same time attempting to assure sufficient rope for industrial needs.

CAPTAINS CAL McMILLAN and PHILIP F. ROACH of the Coast Guard come aboard for the Mariners Club Get-together.
(Review on page 94.)

HERMAN D. NICHOLS

Navy Again Honors Bantam Bearings for War Work

For the second time in six months the Navy has expressed appreciation to employees and management of the Bantam Bearings Corporation for an outstanding production record on work being done for the Navy by awarding the corporation the coveted "E" for excellence pennant with white star and fouled anchor, symbolic of an outstanding production record since the firm received an "E" pennant six months ago.

Lieut. Kenneth Keepers and Ensign E. C. Dollard presented the award as representatives of the Ninth Naval District.

In accepting the award on behalf of the Bantam Bearings organization, R. B. Nichols, vice president and general manager of the corporation, said, "This citation from the Navy Department is further evidence that our employees are keeping their promise to go all out for the war effort. Since the first "E" award was made we have been able to step up production in a marked degree, and I'm sure every man is ready to try again to better our record."

An additional white star can be added every six months that the company maintains its splendid production record. The Bantam Bearings Corporation was among the first to receive the original Navy "E" award and is one of four in the midwest to receive the additional star and fouled anchor pennant.

Trade News

The directors of Greene, Tweed & Co., New York City, manufacturers of Palmetto and other mechanical packings and special tools, announce the election of Frank J. Hill as vice president. Mr. Hill has been connected with the company since 1915 and has been its sales manager for many years.

Effective July 20, 1942, the Marine Division of Mackay Radio and Telegraph Company, formerly located at 22 Battery Street and 107 Main Street, moved to new and more spacious quarters at 350 Mission Street, San Francisco. The new office, centrally located near the Bridge Terminal, is convenient to all maritime interests.

Bridgeport Brass Company has announced the election of Herman W. Steinkraus, formerly vice president and general manager, as president and general manager of the company. The appointment was made at a meeting of the board of directors on May 25, 1942.

Navy Plant Executive Named

Neil C. Reed of Buffalo, N. Y., was appointed assistant manager in charge of engineering sales and order service at the $14,000,000 Navy propulsion equipment plant which the Westinghouse Electric and Manufacturing Company is building in Western Pennsylvania. Prior to his new appointment he was manager of the Buffalo office of the Westinghouse Electric Elevator Company.

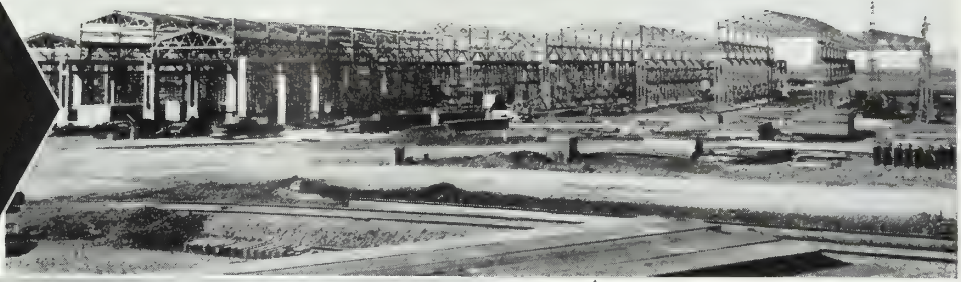
Mr. Reed was an ambulance driver in World War I and served overseas with the 75th Coast Artillery in 1918 and 1919. After the war, he completed his high school work at Syracuse, N. Y., and entered Syracuse University, graduating with a degree in electrical engineering in 1926.

He joined Westinghouse the same year, enrolling in the company's graduate student course at East Pittsburgh, Pa. During the next seven years he was connected with the Pittsburgh office of the Westinghouse Electric Elevator Company. Since 1934 he has been manager of the Buffalo office of the Elevator Company.

NAVY SPEEDS YARD BUILDINGS *With* ENGINEERED *Timber*

Shipfitters Shop—248' x 440'—assembled and erected in

26 DAYS



Storehouse — 150' x 902' — 51 lines of timber trusses assembled and erected in

17 DAYS

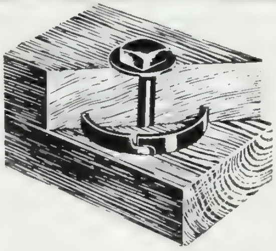
Shop Building—100' x 289'—18-60' trusses for center . . . beams and bays out to side. All erected in

3 DAYS

The Navy's order of the day includes timber trusses . . . short-span and long-span . . . for many building purposes. Typical are the three Buildings illustrated . . . lumber for which was prefabricated by the Henry Mill & Timber Company, Tacoma, Washington, after the structural framework had been designed by the Timber Engineering Company of California.

The TECO System of timber construction was employed throughout . . . to assure strength without waste; to save time, timber, hardware and costs.

If you are not familiar with the TECO method of using timber as an engineering material . . . be sure to write today for full details, illustrations, and designs.



TECO Ring Connectors spread the load on a timber joint over practically the entire cross-section of the wood.

TIMBER ENGINEERING COMPANY OF CALIFORNIA
85 Second Street, San Francisco, Cal.
TIMBER ENGINEERING COMPANY 1319 Eighteenth St., N.W., Washington, D. C.
Yeon Building, Portland, Oregon

News of the Propeller Club of the United States

REAR ADMIRAL VICKERY . . . and a slogan poster featuring the new "Ships for Victory" button.

Port of San Francisco

If Rear Admiral Vickery makes a few more visits here, it is likely that San Francisco will formally adopt him as one of her favorite sons.

This last visit to West Coast shipyards of the "rough and ready" head of Maritime Commission construction, brought him closer to his friends here and widened the scope of his acquaintance.

In just a few words, honestly spoken, Admiral Vickery told more than 150 members of the Propeller Club at a reception in the Bohemian Club's Redwood Room, he was looking forward to another national convention of the organization. He said the 1941 national conclave held in the Hotel Fairmont was the most beneficial to shipbuilding and shipping in his experience.

He told those assembled, and they were ranking members of the shipping operations and shipbuilding, that the West Coast did not have to "bend the knee" to any section of the country. Indeed, said Admiral Vickery, we are setting the pace. We are, he added, reaping the reward of the spirit that was greatly engendered by the Propeller Club national sessions in San Francisco which resulted in such spontaneous and sustained support from the press of this port and the nation to propound the problems, solutions and purposes of the marine industry to the people of America.

Port of Los Angeles

Edgar M. Wilson, general agent of American President Lines, was elected president of the Propeller Club, Port of Los Angeles, at a special meeting of the club held Wednesday at the Biltmore.

Wilson was installed with other new officers at the same meeting.

Others elected were: J. D. Baker, Panama Pacific Line, first vice president; James L. Adams, Lillick, Geary, McHose and Adams, attorneys, second vice president; Charles H. Bayly, Crescent Wharf and Warehouse Co., third vice president; and J. B. Hurd, Matson Navigation Co., secretary-treasurer.

Named to the board of directors were: Edgar M. Wilson, American President Line; Arthur Eldridge, L. A. Harbor department; Perry S. Newcomb, Barber Steamship Lines, Inc.; Leonard T. Backus, Fireman's Fund Indemnity Co.; Daniel Dobler, The Texas Co.; R. W. Gerhart, California Shipbuilding Corp.; Ralph J. Chandler, Matson Navigation Co.; and Fred A. Hooper, American-Hawaiian Steamship Co.

Propeller Club Chartered at Maine Maritime Academy

The 83rd Propeller Club received its charter on May 29—The Propeller Club of the United States, Port of Maine Maritime Academy. Of particular interest is the fact that this is the 20th Junior or Student Propeller Club to be established, and the 3rd Club organized in a State Maritime Academy. The other two Academy Ports are New York State Maritime Academy, Fort Schuyler, N. Y., Port No. 38; chartered March 11, 1935; California Maritime Academy, Tiburon, Calif., Port No. 68; chartered August 30, 1939.

The superintendent of the Maine Maritime Academy is Rear Admiral Douglas E. Dismukes, U. S. N. R., and the chairman of the board of trustees is Mr. Ralph A. Leavitt. Lieut. Comdr. E. Clifford Metcalf, executive officer of the Academy, is the faculty adviser of this Propeller Club.

STOP WELD SPLATTER FROM BREAKING YOUR LIGHT GLOBES!

. . . simply treat them with

THERMACOTE

Protective Coating
(newly patented — quickly applied)

OUR CHEMICAL IS ENTIRELY TRANSPARENT
NOT A LACQUER OR VARNISH

Leading SHIPYARDS report a large SAVING in money and man hours! . . .
This protective coating is also rain-resistant

Immediate Delivery on all Sizes and Makes through your regular dealer

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All inquiries outside of California handled through Los Angeles office

PROTECTION AGAINST FLYING GLASS

(Continued from page 86)

washed, or can be painted with "blackout" paint if desired.

A soft opaque paint applied over Garinol provides perfect blackout combined with perfect glass protection. This combination also eliminates the cracking and breaking of glass (due to different coefficients of expansion) that is so currently experienced when "blackout" paint is applied directly to the glass.

On exterior glass, Garinol is applied on the inside only. On interior glass, it is applied on both surfaces. The material is marketed in three consistencies, named respectively Spray, Brush and Industrial. Two coats of "Spray" are equivalent to one coat of "Brush." On ordinary window glass $\frac{1}{16}$" thick, one coat of "Brush," or two coats of "Spray," is recommended for panes up to six feet square. For large panes of heavy plate glass, "Industrial" consistency Garinol should be used.

The Brooks Equipment Corporation of California is distributor of Garinol for the Pacific Coast.

Hagan Opens New Branches

Hagan Corporation and its subsidiaries, Hall Laboratories, The Buromin Company, and Calgon, Inc., announce the opening of branch offices and laboratories in San Francisco and Los Angeles.

The San Francisco office will be located at 149 California Street and Clyde F. Williamson will serve as district manager. He will be assisted by Messrs. Richard Shaler, Joseph Shafer, and K. J. MacRae.

The Los Angeles office will be located in the Overland Terminal Building and will be in charge of Ray L. Sullivan.

The affairs of Bull & Roberts, concultants on marine boiler water problems, will be handled by Hagan Corporation at both addresses.

New Captain Dollar

There's a new captain in the Dollar family, famous Pacific Coast Shipping group. A recent list of Army promotions brought word of the advancement in rank of Robert Dollar from first lieutenant to captain in the infantry.

Capt. Dollar, a son of the late J. Harold Dollar and grandson of the Robert Dollar who founded the shipping dynasty bearing their family name, is on duty with Army Transport Service at Fort Mason. He is a graduate of University of California. Capt. Dollar served in the Reserve Corps before being called to active duty last year. His home is at 157 Stanyan Street, San Francisco.

McCormick Man

John A. Stein, who has been associated with the McCormick and Luckenbach shipping firms for the last 22 years, was recently commissioned a first lieutenant in the Army Quartermaster Corps and was assigned to Army Transport Service at Fort Mason. Lieutenant Stein, a native of Baltimore and a veteran of World War I, lives at 201 Magnolia, Millbrae.

The "OVERBOARD"
LIFE SAVING SUIT
to Keep 'Em Floating

Incorporating
all the new protective features, including attached rubber gloves

Other Features

Rubber-coated on strong fabric . . . One piece including hood, gloves and boots . . . Made in one large size to accommodate all wearers.

Requires only a fraction of a minute to put on. Special "Rope Pull" closure . . . Suit is pulled on over clothing and Shoes . . . Light Weight—Strong —Durable.

Approved by the United States Coast Guard

The Good Luck GOODALL RUBBER CO. INC. G R Co INC. Sign in Rubber

Goodall Rubber Company, Inc.
SEATTLE LOS ANGELES SAN FRANCISCO
Mills TRENTON, N. J. Established 1873

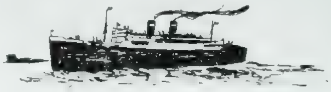
Dr. Grady on League Committee

On August 5 Dr. Henry F. Grady, president of the American President Lines, was en route to Princeton, New Jersey, to serve as chairman of the Economic Committee of the League of Nations, meeting at Princeton University August 7 to 10. The purpose of the sessions, which will be attended by representatives from South America and from London, is to make a survey of the problems involved in post-war economic construction.

Dr. Grady was appointed to the Economic Committee of the League of Nations as American delegate by President Roosevelt in January, 1937. In cooperation with other committees of the League, the Economic Committee established a Raw Materials Committee, which made a report in September 1937. Dr. Grady took an active part in the study preparatory to the issuance of the report and in January 1940 he succeeded to the chairmanship of the committee.

Because of world conditions, no meetings have been held since that time. Now, however, as compensation for lost time, the Economic Committee meetings will be held jointly with the Financial Committee of the League of Nations. A number of representatives of both committees are now in Washington. They include Sir Frederick Leith-Ross, G.C.M.G., Britain's representative on the Economic Committee, and Sir Frederick Phillips, K.C.M.G., permanent under-secretary of the British treasury, who is chairman of the Financial Committee.

Dr. Grady, who as Assistant Secretary of State pioneered in negotiating reciprocal trade agreements and the development of better international relationships founded on sound economic principles, will preside over the joint committee meetings. The League's Economic Committee has made many recommendations in the past regarding the economic problems of individual nations and it has been particularly active in helping smaller countries desiring such assistance.



GEO. E. SWETT & CO., *Engineers*

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CONSOLIDATED ASHCROFT HANCOCK CO., INC.
Consolidated Safety Valves, Ashcroft Duragauges, Hancock Valves, American Temperature Instruments.

CARRIER-BRUNSWICK INTERNATIONAL, INC.
Refrigeration and Air Conditioning Equipment.

WARREN STEAM PUMP CO., INC.
Centrifugal and Steam Pumps for All Services.

ILG ELECTRIC VENTILATING CO.
Blowers, Fans, Unit Heaters.

FISHER GOVERNOR CO.
Reducing Valves, Pump Governors and Control Specialties.

MARKEY MACHINERY CO., INC.
Deck Machinery, Steering Gears.

DORAN COMPANY
Air Whistles, Acid Resisting Valves and Fittings.

KINGSBURY MACHINE WORKS, INC.
Thrust and Journal Bearings.

WATEROUS COMPANY
Waterous Rotary Pumps

DIAMOND POWER SPECIALTY CO.
"Diamond" Soot Blowers, Gauge Glasses, Smoke Indicators.

COLBY STEEL & ENGINEERING CO.
Shipyard and Material Handling Cranes — All Types.

THE LANDLEY COMPANY, INC.
Lifeboat Davits and Equipment.

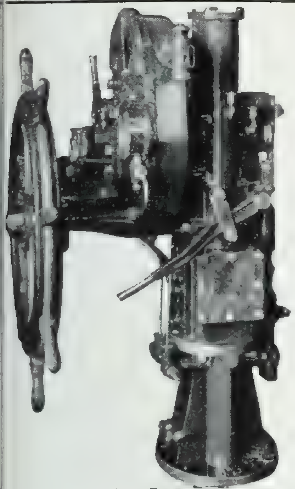
CUNO ENGINEERING CORP.
"AUTO-KLEAN" Mechanically Cleaned Filters.

DAVIS ENGINEERING CORP.
Paracoil Water Heaters, Evaporators, Heat Exchangers.

YORKSHIRE COPPER WORKS, LTD.
"Yorcalbro" Aluminum Bronze Condenser Tubes.

THOMAS C. WILSON, INC.
Tube Cleaners for all kinds of Boilers.

Paracoil
MARINE EQUIPMENT
Evaporators . . . Oil Heaters . . . Oil Coolers . . . Grease Extractors . . . Water Heaters
Distillers . . . Feed Water Heaters . . . Exhaust Gas Boilers . . . Heat Exchangers
DAVIS ENGINEERING CORPORATION
GEORGE E. SWETT & COMPANY
San Francisco
Plant and General Offices, ELIZABETH, N. J.



The Allan Cunningham Line
Winches . . . Windlasses
Capstans . . . Steering Gears
MARKEY
Hydraulic Safety Steering Telemotor—as supplied to the U. S. C. & G. S. "Explorer."
MARKEY MACHINERY CO.
INC.
SEATTLE, WASHINGTON
MARINE AUXILIARY MACHINERY

Manganese Bronze **Propellers**
"Cunningham" Air and Steam
WHISTLES
DORAN COMPANY
Manufacturers
SEATTLE, WASH.

DEPENDABILITY
IS PART OF THE WARREN TRADITION

In the long run, the most desirable quality that a man or a piece of equipment can have—particularly when the going is tough—is DEPENDABILITY. And dependability is *built right into* every Warren Pump.

All Warren Marine Pumps are *soundly* designed, *soundly* engineered and *soundly* constructed. They have good details—liberal clearances . . . extra-heavy shafts . . . over-sized bearings . . . broad-faced case rings . . . properly proportioned liquid passages.

For nearly 40 years, Warren Pumps have been serving *dependably* and *economically* on every type of vessel from liners to freighters . . . aircraft carriers to tugs. Specify Warren with complete confidence for *your* vessels—for new pump installations or replacements.

WARREN STEAM PUMP COMPANY, INC., WARREN, MASSACHUSETTS

MARINE-INDUSTRIAL SALES & SERVICE
58 MAIN STREET · YUKON 2100 · SAN FRANCISCO

TODD
"Keeps 'em Sailing"

THE RECORD BREAKING CREW, pictured here, is composed of, left to right: Evan N. Valentine, holder-on; Samuel Krysczum, riveter; Joseph Ferguson, reamer's helper; Lawrence Giangrosso, heater; Salvatore Avellina, reamer, and Arnold Garguilo, heater. Kneeling are: Thomas Fortune and Nicholas Santello, passers.

FOUR THOUSAND four hundred and eighty-one vessels, equaling 15,000,000 tons, were constructed, repaired or converted by the eleven plants of the Todd Shipyards Corporation during the year ending June 27, it was announced by John D. Reilly, president of the corporation, at the annual meeting of stockholders which was held at One Broadway, New York City. For reasons of national security, it is not wise to reveal in detail plant expansion and the type of vessels repaired, converted or constructed in the various yards of the company. However, the total production for the year equaled three hundred and sixty-seven vessels per month either constructed, repaired, or converted.

One of the points emphasized to the stockholders was that every workman connected with the Todd organization is bending every effort to construct as fast as humanly possible the vessels ordered by the Maritime Commission, the Navy, the Army and the British Government. This enthusiasm extends to the repair of ships as well, so much so that the men are rushing out repair work at a speed never before attained. The workmen created and adopted their own slogan, "Keep 'Em Sailing."

This slogan originated at a conference of management and labor, at which the fact was emphasized that a ship not in service is not a ship at all.

The men agreed in principle and in fact; how thoroughly they agreed is proven by the figures themselves.

One thing of which the company can be especially proud, is that despite the speed with which the repair work is now being turned out, the quality is consistent with the high standard demanded by the company as well as that required by the Navy, the Army and the Maritime Commission.

As a further illustration of the *esprit de corps* of the men in the yards, Mr. Reilly cited a recent contest between two crews of riveters in the Todd Erie Basin yard, when a new world's record for setting rivets was established. The "fight" was just as keen as any Army-Navy football game and at the end of the day, seven and three-quarters hours of actual working time; the No. 1 crew had set 2793 rivets, or one every ten seconds. The second team was only forty-eight rivets behind. Between them, the two teams handled a little more than five-eighths of a ton of rivets. The speed of the rivet hammer was faster than that of the fastest machine gun.

Francis J. Gilbride and William A. Maloney were reelected directors of the corporation for four-year terms. The other directors are: Emile P. Enfer, Joseph Haag, Jr., F. D. Hesley, George G. Raymond, John D. Reilly and J. Herbert Todd.

RUNNERS-UP—Left to right, they are: R. Daoust, passer; H. Wueffen, reamer; J. Zolubas, riveter; Stabley Grezleak, heater; H. King, holder-on; William Peck, heater. Kneeling are: A. Daoust, passer, and C. Hunt, reamer's helper.

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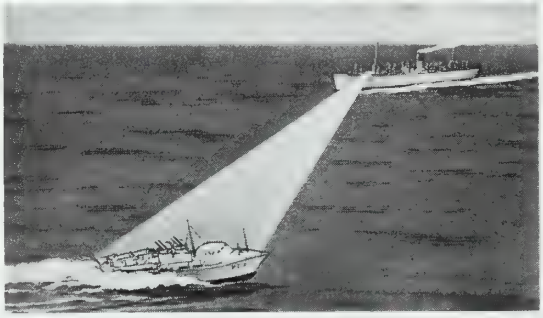

Wide - angle light beams of many types of lamps, lights and searchlights have varied marine uses, but for communications, they are unsafe and capable of detection by the enemy.

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VENTILATORS FOR LIBERTY SHIPS

VENTILATOR COWLS for Liberty ships at the plant of Weber Showcase and Fixture Company, Los Angeles.

Thousands of cowl ventilators, destined for installation on the hundreds of Liberty (EC-2) 10,000-ton cargo ships under construction in Pacific and Atlantic Coast yards and along the Gulf Coast, are rolling off the presses of Weber Showcase and Fixture Co., at Los Angeles, Calif., these days.

Enough cold rolled steel to fill 50 freight cars will be fed into the presses before present orders from the U. S. Maritime Commission are completed. These involve ventilators of eight sizes and shapes, measuring from 4 ft., 4½ in. to 8 ft., 6½ in. in height, and from 20 in. to 72 in. in diameter. Although the total number may not be stated, they represent the majority of all such ventilators being fabricated by American factories. Largest of the units, made of 14-gage enamel steel, weigh 400 pounds each.

Whereas the ventilators formerly were made by a combination of pressing, riveting and hammering, two presses recently completed by Weber engineers will eliminate several of the steps once necessary. The largest of these will start in July pressing the largest size ventilators. From a single sheet of steel, this press will form in a single powerful operation one-half of the unit. The halves are welded together to form the complete ventilator.

Construction of this huge press is a fine example of American mechanical ingenuity. Unable to obtain such a unit anywhere in the United States, engineers built and had the press in operation ten weeks after completion of plans.

Weighing 210 tons, resting on a thick bed of concrete, its base surrounded by concrete walls six feet thick, the press is completely earthquake proof. Its action is so gentle during the drawing process that virtually no shock is transmitted through the earth to nearby workers. Carrying a stroke of 84 in., the press can draw steel from a flat sheet into a shade 48 in. deep.

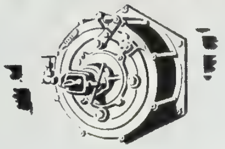
FIRST VALVE off the assembly line of the Crane Co., San Francisco. Left to right: Lt.-Comdr. J. J. Haviside, U.S. N.R., Senior Naval Advisor, and Col. F. M. Smith, State Director, both of Contract Distributing Branch, WPB, and F. F. Elliot, manager, Crane Co., San Francisco.

First Valve Off the Line

The San Francisco branch of Crane Co. is engaged in the manufacture of steel valves under the subcontracting method inaugurated by the War Production Board. Castings are made locally from Crane patterns and most of the machine work is subcontracted to local shops. Assembling and testing is done at Crane Co., San Francisco, under the supervision of factory experts, which insures quality of product as though manufactured at the main factory, Chicago.

Colonel F. M. Smith and Lieutenant Commander J. J. Haviside of the War Production Board were helpful in locating foundries and machining facilities, according to Mr. F. F. Elliott, manager of the San Francisco branch.

TODD
COMBUSTION EQUIPMENT



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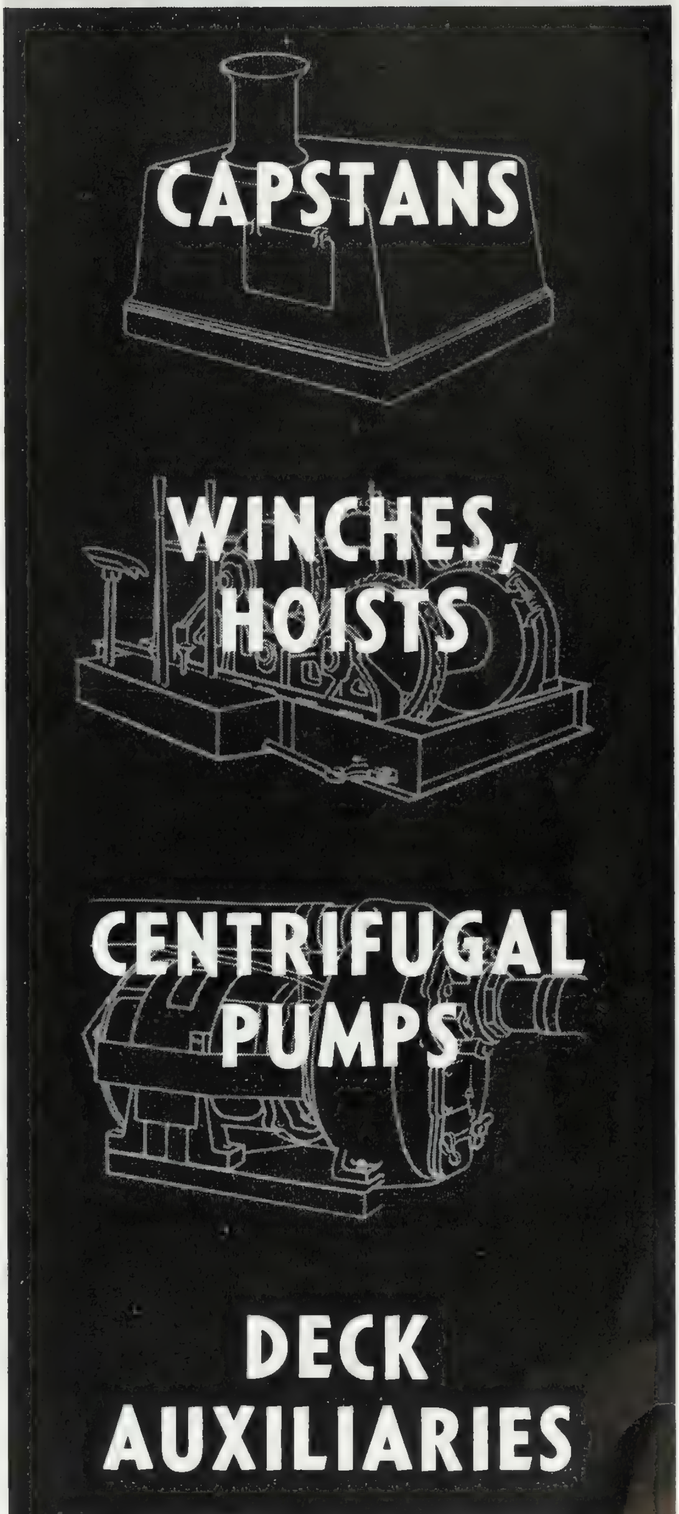

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MODELS HQAV, HQBV—arranged for vertical installation where headroom is restricted.

COMPLETE PUMPING UNITS—All Kinney Marine Pumps can be supplied as complete pumping units with turbines or motors and independent reduction gears. Buying the unit complete has many practical advantages.

ENGINEERING INFORMATION, complete description, and illustrations of these and other Kinney Pumps are all in BULLETIN 18. Write the nearest office for a copy or for any specific information you need:

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Better Light For Welders

The sudden and tremendous growth of welding in the war industries and the attempts at solution of these problems has led to much profitable research.

One problem is that of illumination working in cramped situations in the hulls of ships; the welder must have light. The ordinary glass bulbs of incandescent lights soon become partially covered with weld splatter and quickly become useless as a source of light either from opaqueness of the bulb or from too quickly burning out the filament.

This causes great expense for bulbs and also cuts down the production of welders.

After considerable research, a San Francisco chemical engineer developed a clear plastic coating for bulbs, which he named Thermacote and which has the following characteristics:

It absorbs less than 3 per cent of the light;

It is water resistant and will not fog in rain or mist;

It has perfect adhesion to glass, and

It has no adhesion with hot metal particles.

Thermacote has had a thorough test in several San Francisco Bay area shipyards and has demonstrated these results:

Mazda bulbs last four to eight times as long with the coating as without it, and

A very considerable saving in welders' time is made by its use.

Another application of great value is on the cover glasses of welders' helmets. These protective devices last ten times as long when coated with Thermacote.

This plastic is baked onto the lamps and cover glasses and, when properly applied, is so crystal clear as to be indistinguishable by the eye.

The Thermacote Co. of California is now manufacturing and applying this material. It is being distributed from offices at 866-31st Avenue, San Francisco, and at 421 South San Pedro Street, Los Angeles.

Wide- and Narrow-Beam Flood Lights

Designed especially for lighting shipyards, construction projects, industrial yards and sports areas, the new wide- and narrow-beam flood lights are announced by the Westinghouse Electric and Manufacturing Company, Cleveland, Ohio.

Both the VE-18, wide-beam and the VEG-18 narrow-beam units are equipped with a snap cover having a heat resisting glass lens, making them dust-tight and moisture-proof to prevent accumulation of dust and dirt on the reflecting surface. A choice of narrow-beam glass reflector or wide-beam porcelain enamel reflector with various lenses and lamp combinations (750 to 1500 watts) provide a complete range of beam spreads.

The reflector housing is formed from annealed sheet iron with a green porcelain enamel finish.

Pacific
MARINE
REVIEW

SEPTEMBER 1942

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EASILY STOWED

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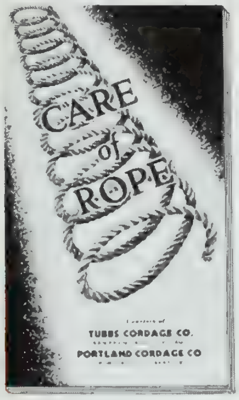

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giving you many helpful suggestions for making Marine rope last longer.

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Shipowners Association of the Pacific Coast

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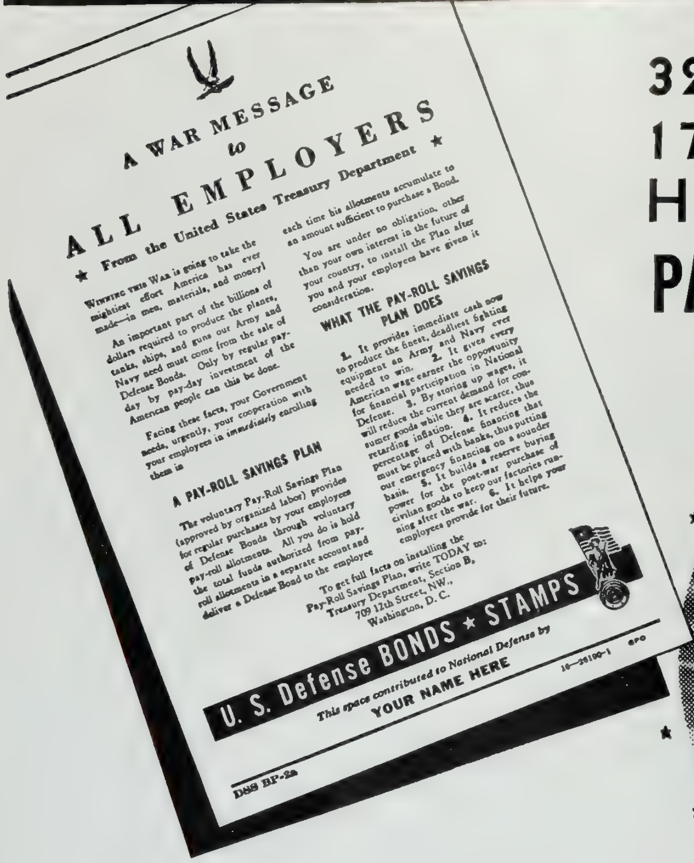

A WAR MESSAGE
to
ALL EMPLOYERS
★ From the United States Treasury Department ★

WINNING THIS WAR is going to take the mightiest effort America has ever made—in men, materials, and money!

An important part of the billions of dollars required to produce the planes, tanks, ships, and guns our Army and Navy need must come from the sale of Defense Bonds. Only by regular pay-day by pay-day investment of the American people can this be done.

Facing these facts, your Government needs, urgently, your cooperation with your employees in *immediately* enrolling them in

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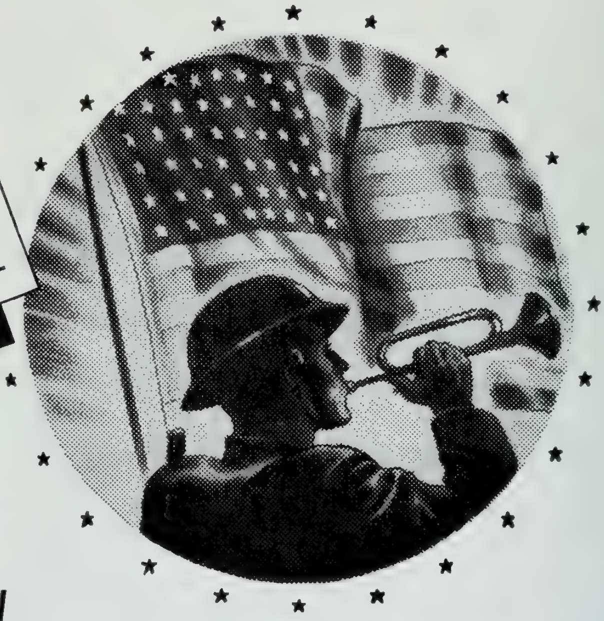

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Pacific MARINE REVIEW

Editorial Comment

Shipyards All-Out For Victory

A FEW MONTHS BACK, several of our more influential dailies, weeklies and monthlies were having a great time rolling out lurid stories of inefficiency and shirking, and even sabotage, on the part of shipyard labor.

Today, most of these same journals are having a better time rolling out grandiose stories of the energy, determination and self-sacrifice on the part of shipyard labor.

Now, shipyard craftsmen are just like any other craftsmen interested in their job, their workmanship, their family and their country. Shipyards in America during the past two years have risen from a rating of the lower grades in third-class business to the upper brackets in first-class business.

Backed by Congress through the U. S. Maritime Commission, great shipyards and multitudes of shipyard workers have been literally evolved over night, and the majority of those yards and of those workers are just beginning to "click." They are doing a splendid job and doing it for the most part in a fine American spirit and they deserve the acclaim of their fellow citizens.

The new yards are using great numbers of workers who are having their first experience in shipyards, and the way the majority of these workers take hold is certainly encouraging.

We are very proud of the fact that the new Pacific Coast yards building Liberty ships are generally ahead of the yards in other sections. In a measure this proves our often-repeated assertion that we should for many reasons be better able on the Pacific Coast to speedily build ships on the new shipbuilding technique, and we are not going to analyze those reasons here.

The Pacific Coast "Liberty" yards are now delivering a total of more than one 10,000-ton carrier every day and the tempo is increasing. It is freely predicted that P. C. "Liberty" yards will be delivering two 10,000-tonners a day before the end of 1942.

And this is not just building targets for submarines. The great majority of these vessels get across in convoy with their cargoes and their hulls untouched by enemy action.

Our hats are off in a salute of admiration and respect: to those new shipbuilders, the majority of whom have as little idea of the meaning of such words as sheer, camber, pintle, or gudgeon, as they have of Sanscrit or Egyptian hieroglyphics; and to their greatest leader, who himself admits that he does not know "the front end of a ship from the back end."

"Keep 'em Sailing" Say the Repair Yards

EVERY NEW OR OLD SHIP at work requires constant service from expert ship craftsmen. This work all falls to the old line shipyards and ship repair plants which are equipped with the adequate experience, the tools and rigs, the docks and the piers necessary to take care of the extremely various results of sea hazards in peaceful merchant service.

Many of the older yards are engaged not only in building new ships, but in repairing, reconditioning, rebuilding, cleaning, and painting existing vessels. This latter work in times like these is just as important and in certain instances may be more important than the production of new ships.

Few of our citizens realize the volume and importance of the work done under the supervision of the U. S. Coordinator of Ship Repair and Conversion, over whose office entrance are engraved the words "An idle ship is a crime against the public interest."

We read almost daily official announcements of sinkings of allied vessels by enemy submarines or surface raiders. In many cases, the sinkings referred to are of a date several weeks old. In not a few cases of the vessels named as sunk, the ship has been already salvaged, repaired, and is in service before the notice of her sinking comes to the press.

When the times comes for the lifting of the censorship, the ship repair yards of the United States will have a very voluminous record of heroic labor and proud accomplishment.

Some figures in totals recently released by Coordinator J. E. Otterson give a slight idea of the volume of this work in the past 12 months. These show that:

Fifty-five hundred ocean-going vessels in excess of 2000 gross tons each have undergone minor or major repairs requiring the ship to go to the repair yard;

These vessels represent a total tonnage of more than one-half the merchant ocean-going tonnage of the world;

In addition, at least an equal number of ocean-going vessels in excess of 2000 gross tons each have had minor repairs made outside the shipyards and at their own loading docks;

In addition to this volume of work (which is more than six times the normal volume), there has been and still is a tremendous volume of Navy and Army repair and reconditioning work, and an equally great volume of work on vessels of less than 2000 gross tons each.

To appreciate the magnitude of this task, we must remember that in ship repair work each case is a distinct—and entirely different—problem. Experience in diagnosis of the problem, judgment as to the practicability of its solution, skill and determination in accomplishment, must be combined with a mobile floating plant and a permanent yard base equipped with everything necessary to carry on major repairs and/or alterations to hull and/or machinery.

Says Coordinator Otterson in a very conservative, but nonetheless forceful statement:

"The work performed in repair yards requires management and workmen of the highest order of skill in view of its variety, complexity and non-repetitive character. Shipyard management and workers have risen to the demands of their task. The ships have been promptly and efficiently repaired, and valuable 'ship days' have been saved.

"The accomplishment of the shipyards of this country in carrying through this great volume of repairs successfully is, I believe, one of the most vital contributions to the cause of national defense.

"In the matter of ship repairs, the United States is certainly fulfilling its role as the 'Arsenal of Democracy.' "

Shipbuilding Records Twenty-five Years Ago

A PERUSAL OF PACIFIC MARINE REVIEW for September, 1918, yields this very interesting editorial and these charts showing the rivalry between shipyards in those days, and the records made.

It is very interesting to note that the basis then suggested for comparison in records—*i.e.,* tonnage delivered per way per year—is the same as that now used by the Maritime Commission, except that the term "year" is changed to "month."

"We reproduce herewith a chart and a short article from the *Emergency Fleet News* which is self-explanatory. The article is as follows:

"The accompanying chart, showing the steel ships launched in the shortest time from date of keel laying, was prepared by the Statistical Section of the United States Shipping Board Emergency Fleet Corporation on information contained in reports of District Officers.

"It shows that the *Tuckahoe,* the 4900-ton collier launched by the New York Shipbuilding Corporation in 27 days, still holds first place, with the *Lake Narka,* built by the Cleveland plant of the American Ship Building Company, the *South Pole,* the 6200-ton refrigerator ship built by the Baltimore Dry Docks and Ship Building Company, and the *Defiance,* the 12,000-ton cargo carrier built by the Union Plant of the Bethlehem Shipbuilding Corporation, in a virtual tie for second place.

"The *Defiance* was built in 38 actual working days, according to the District Officer's report, although 46 calendar days passed from the date of keel laying to launching. The *De-*

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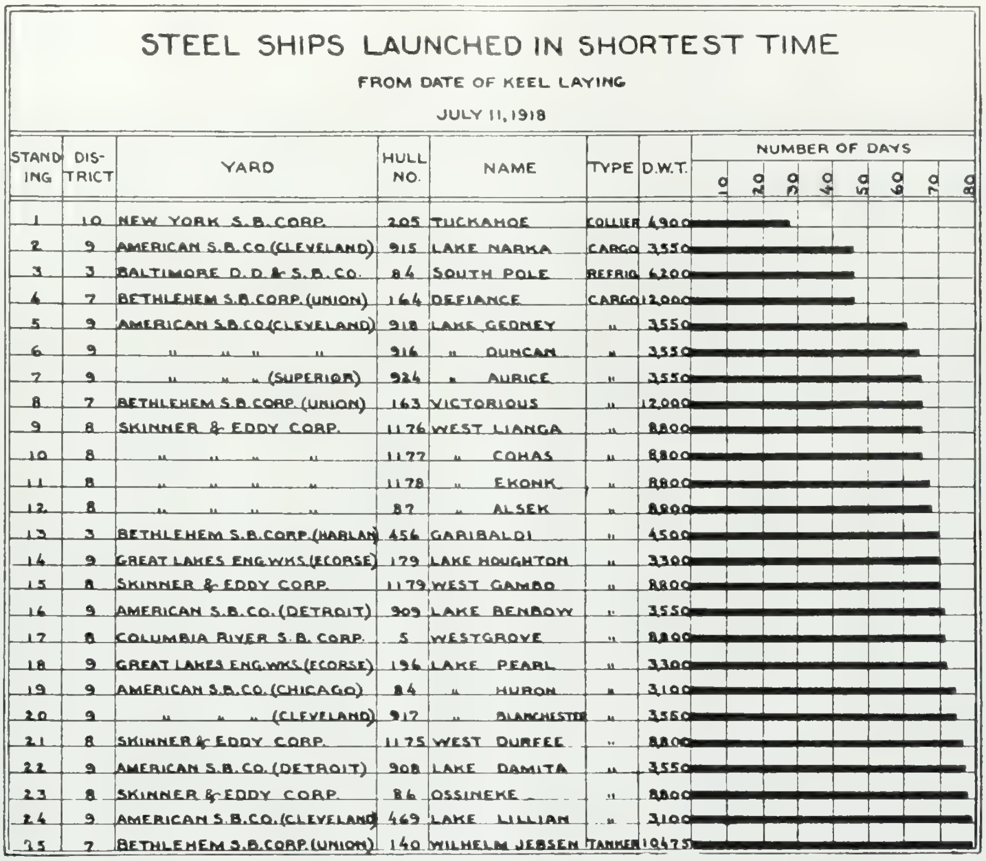


STEEL SHIPS LAUNCHED IN SHORTEST TIME

FROM DATE OF KEEL LAYING

JULY 11, 1918

STANDING	DISTRICT	YARD	HULL NO.	NAME	TYPE	D.W.T.
1	10	NEW YORK S.B. CORP.	205	TUCKAHOE	COLLIER	4900
2	9	AMERICAN S.B. CO (CLEVELAND)	915	LAKE NARKA	CARGO	3550
3	3	BALTIMORE D.D. & S.B. CO.	84	SOUTH POLE	REFRIG.	6200
4	7	BETHLEHEM S.B. CORP. (UNION)	164	DEFIANCE	CARGO	12,000
5	9	AMERICAN S.B. CO (CLEVELAND)	918	LAKE GEDNEY	"	3550
6	9	" " " "	916	" DUNCAN	"	3550
7	9	" " " (SUPERIOR)	924	" AURICE	"	3550
8	7	BETHLEHEM S.B. CORP. (UNION)	163	VICTORIOUS	"	12,000
9	8	SKINNER & EDDY CORP.	1176	WEST LIANGA	"	8800
10	8	" " " "	1177	" COHAS	"	8800
11	8	" " " "	1178	" EKONK	"	8800
12	8	" " " "	87	" ALSEK	"	8800
13	3	BETHLEHEM S.B. CORP. (HARLAN)	456	GARIBALDI	"	4500
14	9	GREAT LAKES ENG. WKS. (ECORSE)	179	LAKE HOUGHTON	"	3300
15	8	SKINNER & EDDY CORP.	1179	WEST GAMBO	"	8800
16	9	AMERICAN S.B. CO. (DETROIT)	909	LAKE BENBOW	"	3550
17	8	COLUMBIA RIVER S.B. CORP.	5	WESTGROVE	"	8800
18	9	GREAT LAKES ENG. WKS. (ECORSE)	196	LAKE PEARL	"	3300
19	9	AMERICAN S.B. CO. (CHICAGO)	84	" HURON	"	3100
20	9	" " " (CLEVELAND)	917	" BLANCHESTER	"	3550
21	8	SKINNER & EDDY CORP.	1175	WEST DURFEE	"	8800
22	9	AMERICAN S.B. CO. (DETROIT)	908	LAKE DAMITA	"	3550
23	8	SKINNER & EDDY CORP.	86	OSSINEKE	"	8800
24	9	AMERICAN S.B. CO. (CLEVELAND)	469	LAKE LILLIAN	"	3100
25	7	BETHLEHEM S.B. CORP. (UNION)	140	WILHELM JEBSEN	TANKER	10475

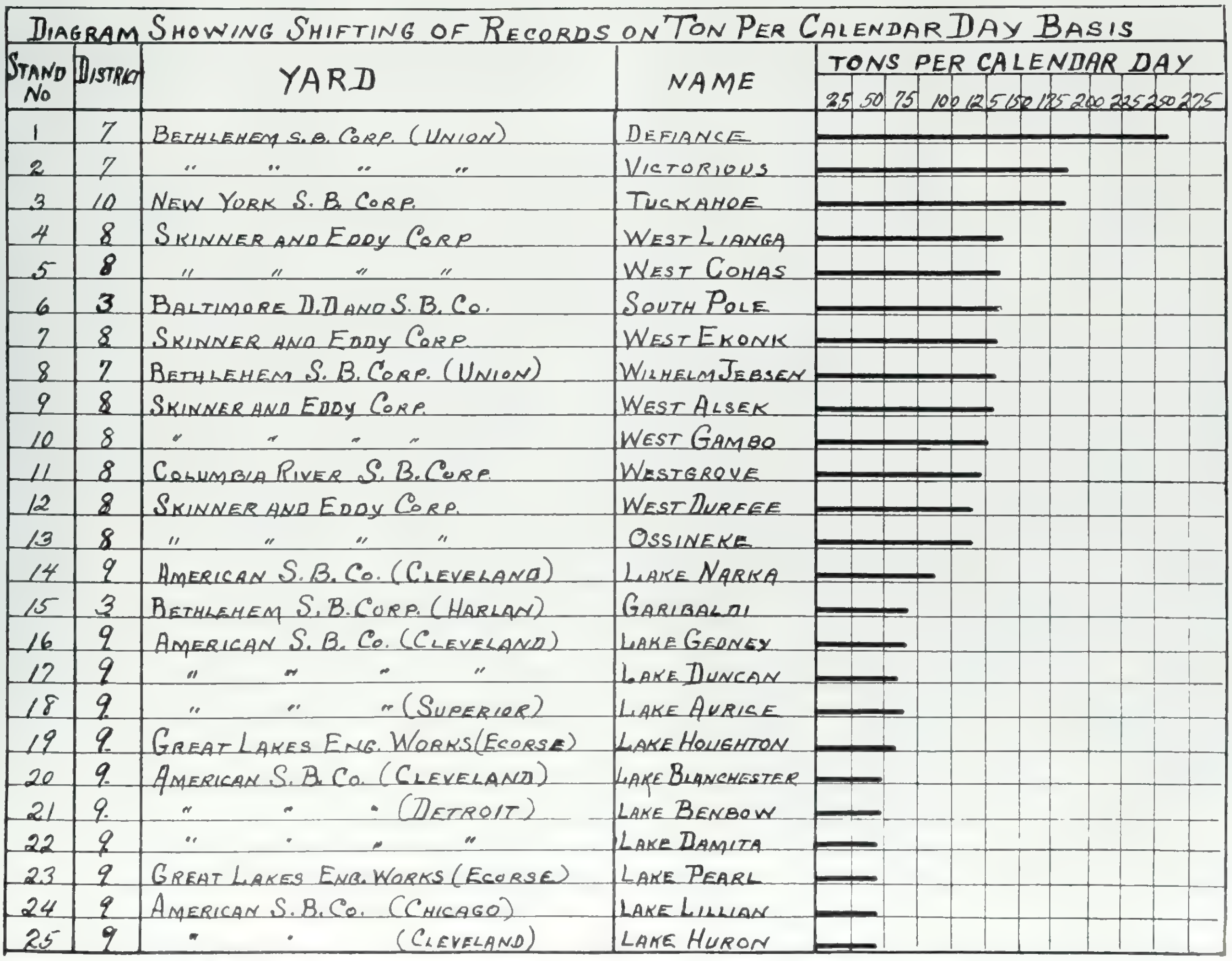


DIAGRAM SHOWING SHIFTING OF RECORDS ON TON PER CALENDAR DAY BASIS

STAND No	DISTRICT	YARD	NAME
1	7	Bethlehem S.B. Corp. (Union)	Defiance
2	7	" " " "	Victorious
3	10	New York S.B. Corp.	Tuckahoe
4	8	Skinner and Eddy Corp	West Lianga
5	8	" " " "	West Cohas
6	3	Baltimore D.D and S.B. Co.	South Pole
7	8	Skinner and Eddy Corp.	West Ekonk
8	7	Bethlehem S.B. Corp. (Union)	Wilhelm Jebsen
9	8	Skinner and Eddy Corp.	West Alsek
10	8	" " " "	West Gambo
11	8	Columbia River S.B. Corp.	Westgrove
12	8	Skinner and Eddy Corp.	West Durfee
13	8	" " " "	Ossineke
14	9	American S.B. Co. (Cleveland)	Lake Narka
15	3	Bethlehem S.B. Corp. (Harlan)	Garibaldi
16	9	American S.B. Co. (Cleveland)	Lake Gedney
17	9	" " " "	Lake Duncan
18	9	" " " (Superior)	Lake Aurice
19	9	Great Lakes Eng. Works (Ecorse)	Lake Houghton
20	9	American S.B. Co. (Cleveland)	Lake Blanchester
21	9	" " " (Detroit)	Lake Benbow
22	9	" " " "	Lake Damita
23	9	Great Lakes Eng. Works (Ecorse)	Lake Pearl
24	9	American S.B. Co. (Chicago)	Lake Lillian
25	9	" " (Cleveland)	Lake Huron

OFFICIAL TABULATION OF RECORD construction, keel-laying to launching, on completely riveted ships. Reproduced from PMR, September, 1918.

Ship Repair

A GREAT SHIP REPAIR YARD GROWS . . . AT SAN PEDRO

by Charles F. Connelly

In ONE OF THE MOST significant expansion moves in West Coast shipbuilding, the Los Angeles Shipbuilding and Drydock Corporation of San Pedro, California, is now engaged in a project which will double the facilities of its present large and efficient repair division.

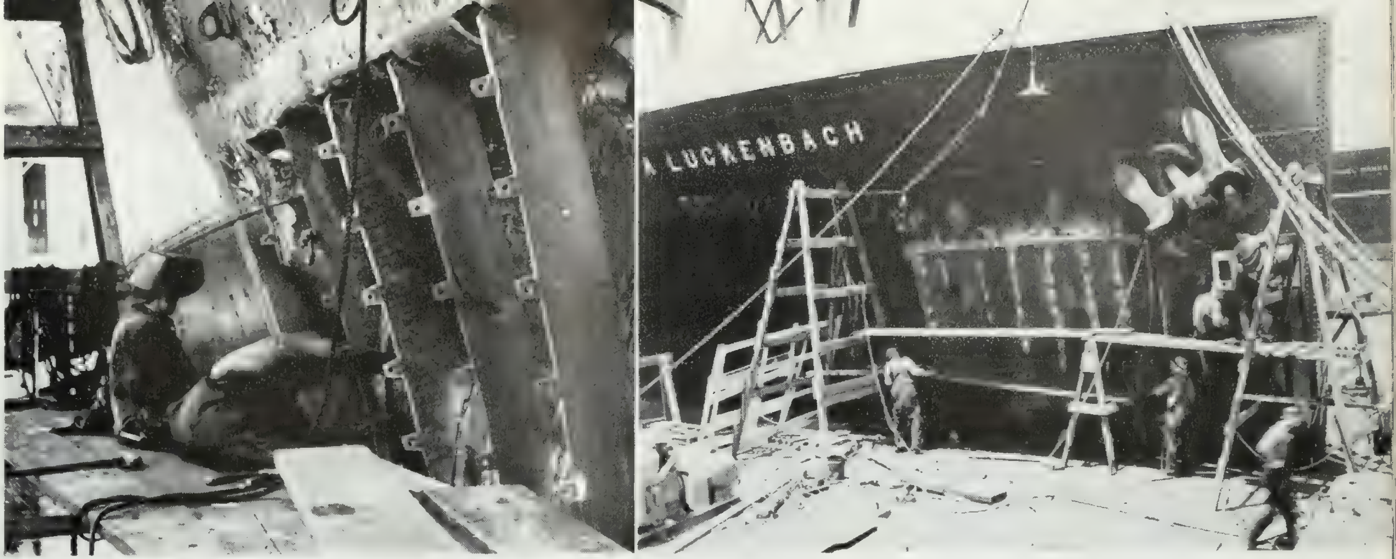
Improvements in the repair facilities of this yard will include a twelve-thousand-ton drydock, the second drydock in the yard. The new facilities for the repair yard are being accomplished under a contract with the United States Navy, and will, when completed, represent an expenditure of approximately $4,000,000. This repair yard will then be in a position to operate independent of the new construction facilities of the corporation, which are now engaged in important new naval construction.

The repair yard installations will include a new plate shop and yard, an electric shop, a pipe shop, a warehouse and other facilities required for complete repair service. The new yard-office building will feature modern lighting and ventilating equipment. Offices will be provided for the maritime surveyors and for the owners' representatives. The present yard-offices will be moved to the site of the new drydock and will serve as headquarters for the dockmaster and his staff.

New Shops

The new plate shop and plate yard will be arranged in production line order, so that there will be no delay from the time the plating leaves the rack. The plate will be quickly expedited from the rack to the lay-out yard, then to the planers, and on to the welding yard for fabrication. From this point a 25-ton crane will deliver the plate to the drydock. All of the machines in the welding yard will be portable, so that this equipment may be moved to any spot on the waterfront.

The pipe shop will be 75 feet wide and 150 feet long. The bending slab and the lay-out slab, will be equal to anything of its type on the entire Pacific Coast. Next to the pipe shop will be the lay-out yard for the pipe department, where the pipe jobs can be laid out in their entirety before being taken



EDGAR A. LUCKENBACH receives emergency repairs to sections damaged by collision at sea.

to the ship. This procedure is unique, in comparison with other repair methods in use on the West Coast.

There will be two large locker rooms for the workmen, one at each end of the yard. In these rooms there will be showers, with hot and cold water. All the fixtures will be in keeping with the most modern appointments.

Included in the general plans of the repair yard are two outfitting and repair wharfs, bringing the docking facilities to a total of four, accommodating eight ships.

In addition to the machine shop to be built in the repair yard, this company now operates an extensive machine shop, which is a part of the greater facilities of the plant, and is the very last word in modern equipment. Here immense parts weighing thousands of pounds are finished to the thousandth of an inch and handled with amazing ease; propellers finished to precision, and shafts completed to a point of surgical fineness. There is scarcely a demand in modern maritime machine technique that this great machine shop cannot care for with comparative ease. With these large and extensive machine facilities to augment those in the new repair yard, certainly this yard will be in a position to meet all marine needs.

New Drydock

The new drydock is of timber construction in six pontoons, and will be a fitting companion to the existing drydock built in 1921. The latter has made a truly fine record in the number and types of vessels it has handled. These have ranged from great steamers that tested the limit capacity of the dock down to fishing craft. As many as eight small craft have been handled on this dock at one and the same time. Outstanding in this docking record is the feat of successfully docking a great tanker of 13,000 tons displacement. This ship was 585 feet in length, 75.6 feet beam. It had a molded depth of 44 feet and a deadrise of $6\frac{7}{16}$ inches. When on the dock she extended 65 feet over the bow end. A water ballast of 1000 tons was used forward to offset the weight of the engines.

As a result of clever planning, the two drydocks will lie parallel and adjacent to each other, so that one crane can efficiently take care of all ordinary needs on both docks. This crane, an American of 25 tons capacity and 110-foot boom, will travel on steel rails. A switching arrangement is also provided, so that if necessary a second crane can be brought up from another part of the yard.

Outfitting Facilities

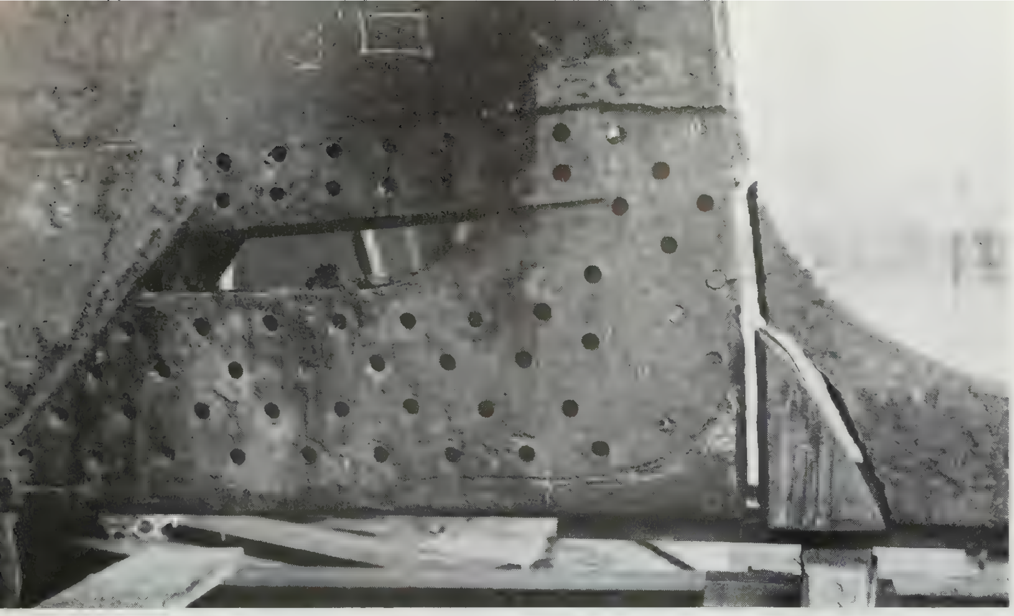
The outfitting facilities of the repair yard have handled many large jobs in reconstructing vessels of every description and widely varying tonnage. Among the reconditioning jobs completed in the yard are: *City of Los Angeles, City of Hawaii, Yale, Harvard* and many other of the larger vessels which had been converted to wartime use during World War I, and whose reconversion to the pursuits of peaceful commerce was accomplished in the Los Angeles Shipbuilding and Dry Dock yards.

From the greater craft of steel construction to the smaller but equally famous sailing vessels, the repair division has been called upon time and again to demonstrate its wide versatility and keen efficiency. Recently this yard reconditioned and re-rigged the *Star of Scotland* from stem to stern. The *Star* is now a Marconi rigged, six-

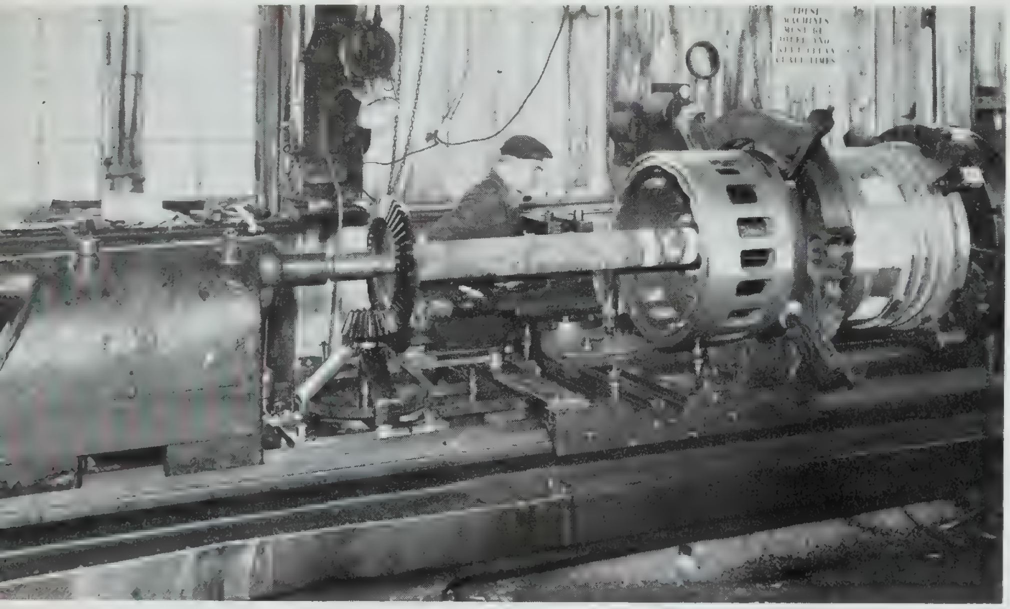
Frank Cavanaugh

●

THIS SMILING IRISHMAN is superintendent of the Repair Department of Los Angeles Ship.



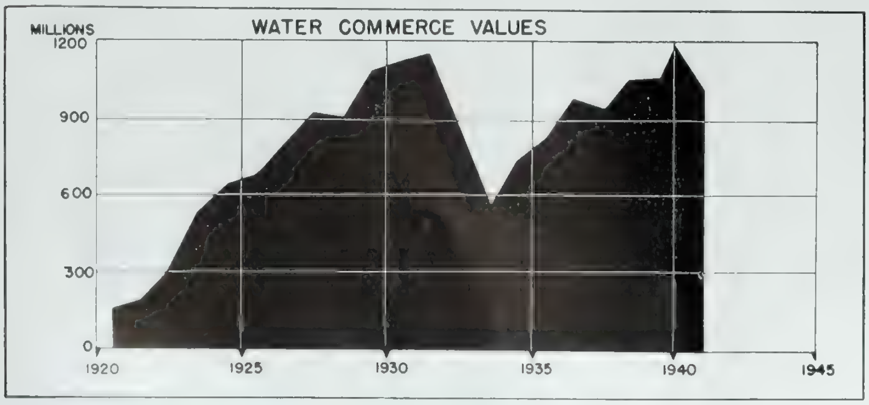
THIS BROKEN STERNPOST was made as good as new by the Thermit welding process.



SPECIAL GEARING RIG on lathe to cut marcel joints on diesel engine cylinder liner.

masted schooner and making sailing ship history, as related in a separate article in this issue of PACIFIC MARINE REVIEW.

Many of the men of the repair yard and drydock have been with the company from ten to twenty years. These men have excellent records for efficiency and skill. Their loyalty and cooperation have been a factor in establishing and maintaining the excellent standards of the yard.



World War I

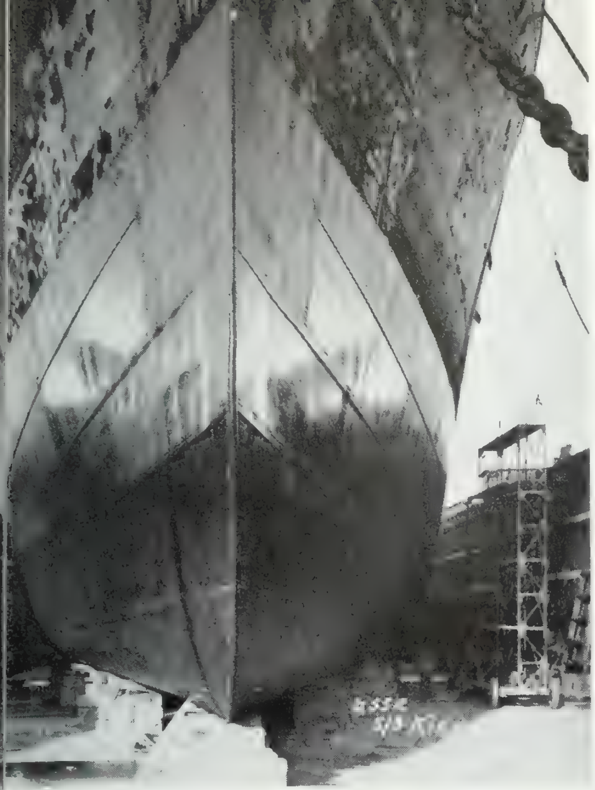
While it is true that this yard originated in time of war, it is in no sense a war baby of this present conflict. It was, in reality, a phenomenon of the mud flats in 1917. Throughout World War I the Los Angeles Shipbuilding and Drydock Company served the United States Government well and earned a place among the great shipbuilding projects of the 1917-1918 conflict. Contracts entered into with the United States Shipping Board, when completed, totaled approximately $62,000,000.

When the war was over, the company was left with a plant costing $4,000,000 and capable of handling approximately $20,000,000 worth of business per annum. This affords a sharp contrast to the original plans of the company, which called for the construction of a compact shipbuilding and repair plant to cost $500,00. At the time, this amount was considered adequate, and the plant sufficient to care for the needs of Los Angeles Harbor for many years to come.

Throughout the World War I period this yard demonstrated ability to meet wartime emergencies. When it was found that engines were not available to run the ships being built, the company designed and built them. Many of the 3500-ihp engines designed, built and installed in some 27 vessels during the last great war are still in use after 25 years of operation. Operations of the repair yard of this important shipbuilding organization over the past 25 years have totaled over $31,000,000. This fact marks the yard as a permanent facility—a future peacetime asset of immense value to Los Angeles Harbor.

Need for Expansion

In planning the expansion now taking place in the Los Angeles Shipbuilding Corporation's repair yard, farsighted executives of the company and the United States Navy looked with knowledge and faith to the future of Los Angeles Harbor as a great American shipping center for maritime commerce. They saw the great expansion and growth of the harbor over these past 25 years. They measured well the expansion and growth now under way in the harbor area, and considered the $60,000,000 in public funds which is



THE OLDEST EMPLOYEES IN THE DRYDOCK CREW

Left to right: Joe Maga (1927); D. M. McGlashen (1926); James Grieve, leaderman (1927); James Munce (1937); Andrew Carlson (1924); General Foreman J. H. Lindemuth (1917); R. H. Parkinson (1917); D. P. Sullivan (1922). R. Guzman (1930) and Robert Lindemuth (1936) were on vacation at the time this photo was taken but the above-pictured crew requested they be mentioned as part of the group.

being used to expand the present harbor facilities.

It is significant that the Navy Department has seen fit to make the expanded repair facilities at the Los Angeles Harbor available for commercial work as well as Naval repair work.

They have reasoned, and reasoned well, that the natural growth of Los Angeles Harbor will attract shipping from all parts of the world, when the war is ended and the great antibellum maritime activity becomes a reality. It is interesting to note that the expenditures in the repair facilities of this company, totaling $4,000,000, are in excess of 6 per cent of the entire amount being spent in public funds on the harbor improvements.

Los Angeles Harbor in the future will equal, if not exceed, the excellent record for growth which it has made in the past. The tonnage records of the past 28 years have grown from 1,739,548 tons in the fiscal period 1914-1915 to 22,849,648 tons in the 1940-1941 period. The highest peak was reached in 1929-1930 with 29,960,130 tons.

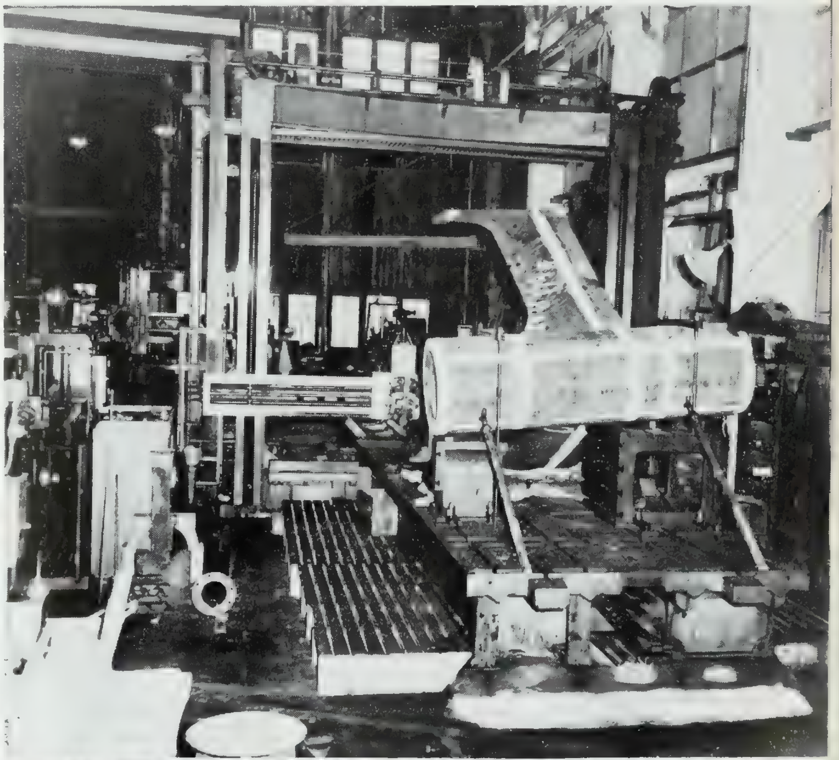
Future World Trade

With the return of peace, world trade undoubtedly will be highly stimulated because of the widespread destruction of commerce carriers throughout the world, and the resultant need which will naturally arise out

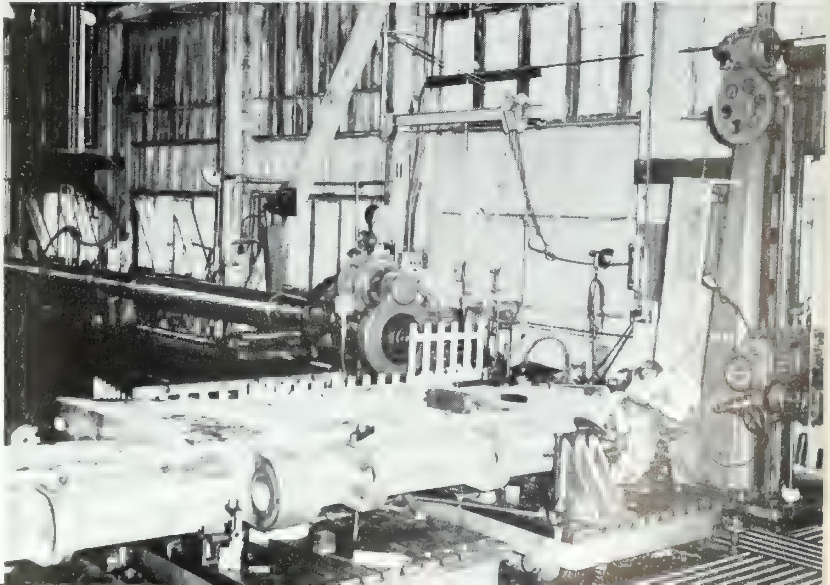
(Page 94, please)

ABOVE LEFT:

SOVIET STEAMER KIEV had a tilt with the ice which resulted in a twisted prow. With expert craftsmanship of the L. A. Ship repair crew, she left looking like new.



STRUT being machined on 15′ planer.



A TAIL SHAFT in one of the big lathes and a large rudder in the horizontal boring and milling machine.

A COZY MESS ROOM

Seagoing Hopper

HAINS AND HOFFMAN

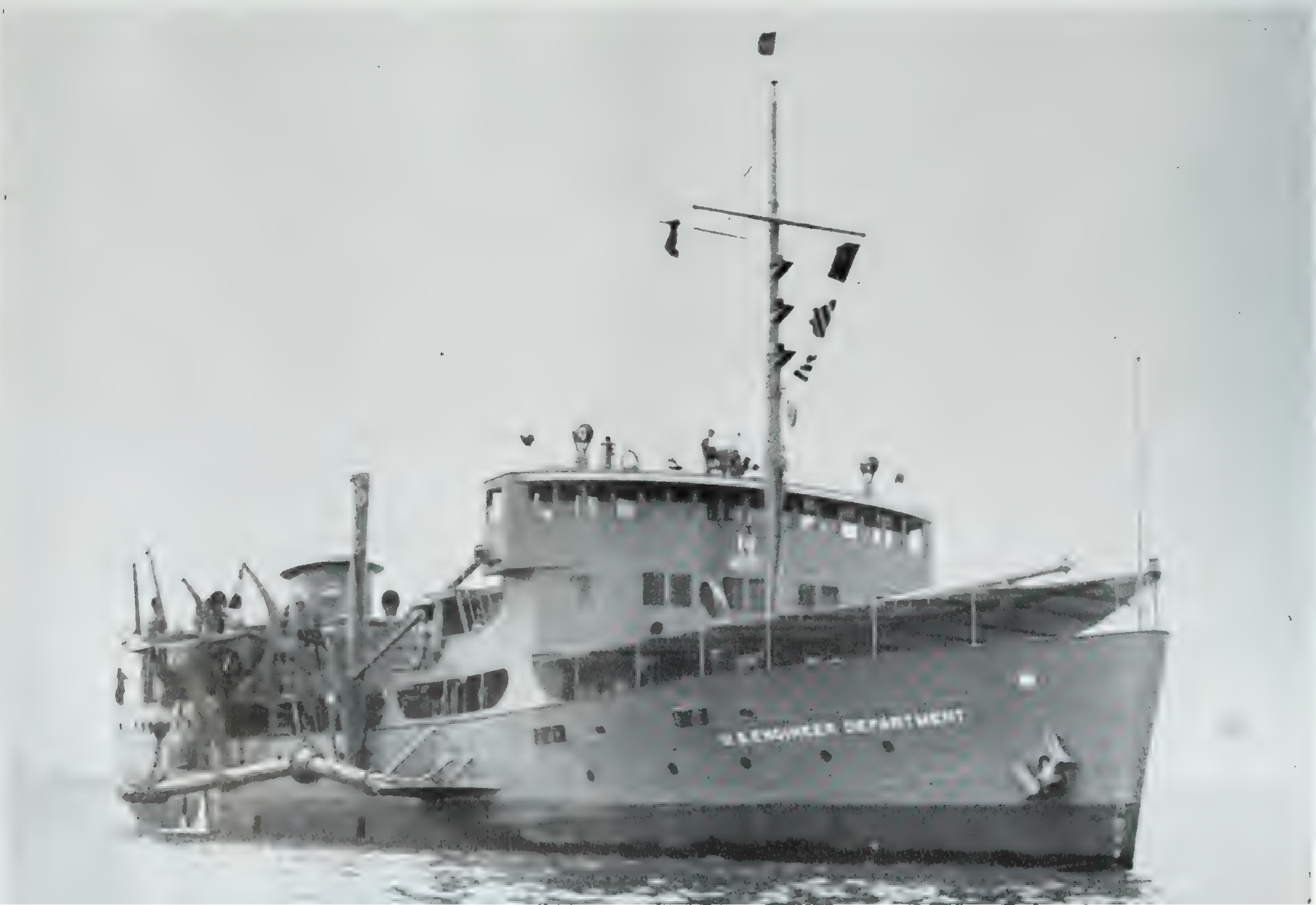
by E. A. Hodge

Marine Manager, Pusey and Jones Corporation

PUSEY AND JONES Corporation just delivered to U. S. Engineer Department two unique and interesting vessels for shoal water dredging. They are the fast seagoing, twin screw, diesel-electric hopper dredges *Hains* and *Hoffman,* the basic designs for which were developed by the Army Engineer Corps' Marine Design Section under the direction of Colonel Harry B. Vaughn, Jr., District Engineer at Philadelphia.

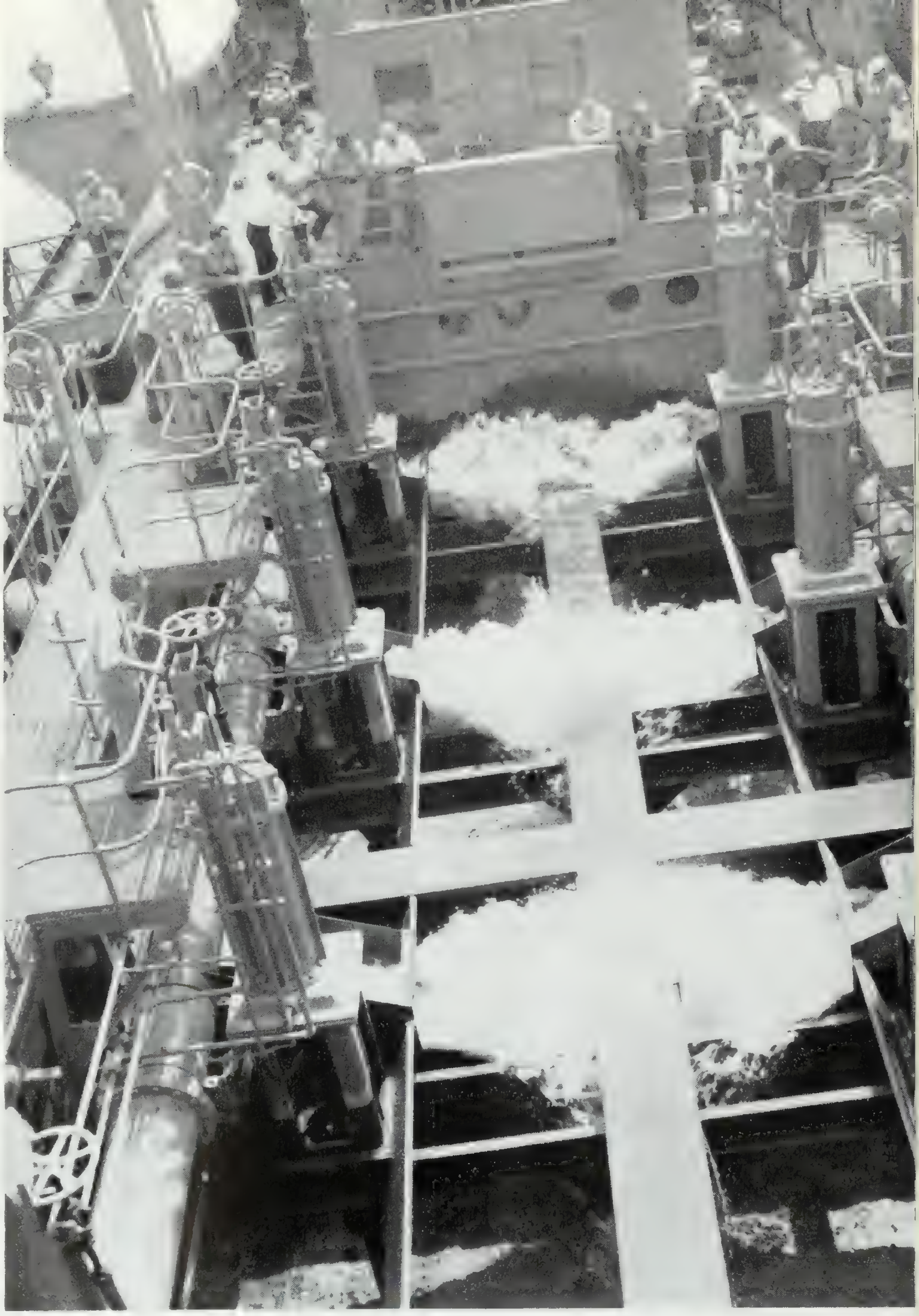
The two primary objectives of design were (1) shoal enough draft (twelve and a half feet maximum) to allow effective work in cutting away sand bars and reefs over which dredges having 18 to 20 feet draft cannot work, and (2) speed enough to keep the non-dredging periods to the minimum commensurate with a hopper capacity of 700 cubic yards. The attainment of these objectives has been amply signalized by the builder's trials on the Delaware River early this summer, when the performance of both dredges exceeded expectations. A loaded speed of 11¼ knots makes these craft the fastest of the department's smaller seagoing dredge fleet. The single twin-suction, electrically-driven pump brought aboard a full load in 36 minutes while dredging along a shoal canal bank, despite the constant passing of large cargo ships that were plying these waters in wartime service, a service via this canal that is only made possible by the methodical work of Engineer Corps dredges. After dumping the load, ship speed in a light condition proved to be 13⅓ knots, which will allow a faster return to dredging ranges than has hitherto been possible with the other seagoing vessels of the hopper dredge type.

For easy handling in confined harbors and tidal rivers, the ship's length has been kept to 212 feet between perpendiculars; the molded beam to just over 40 feet. The overall beam, including the 18-inch suction drag pipes, is



Dredges

DELIVERED TO U. S. ARMY ENGINEERS



DREDGE PUMPS discharging into central hoppers.

53 feet. These pipes penetrate the hull port and starboard in way of the pump room and have common connection with the single 420 hp dredge pump that is positioned on the ship's centerline, well below the light load water plane. The pump's main 20-inch diameter riser is branched into two 20-inch diameter discharge pipes, which run over the eight hoppers their full length. These pipes are provided with manually-controlled nozzles operated from catwalks over the hoppers. Wiers, in the form of hollow steel gates, are arranged for manual raising and lowering along the tops of the hopper overflow coamings, so as to increase the hopper capacity when the dredging of certain types of material makes this advisable.

The load is dumped through eight hydraulically controlled doors in the ship's bottom by an actuating fluid force of 300 pounds per square inch, introduced into as many cast steel cylinders through three-way valves at each hopper control station. The constant 300-pound pressure is maintained in a 55-gallon tank by means of an electrically-driven 100 gpm centrifugal pump connected to a reserve oil reservoir. When closed, the doors are mechanically locked shut so that the need for maintaining the hydraulic pressure is removed.

In the compactly arranged, soundproofed engine room aft are located the prime movers and auxiliaries. Two 12-cylinder, two-cycle, 950 bhp General Motors Corporation diesel engines, mounted on anti-vibration units, are each directly connected to two gener-

PRINCIPAL CHARACTERISTICS

Length, overall	215′11″
Length, between perpendiculars	212′ 0″
Breadth, molded	40′ 4″
Breadth, overall	53′ 0″
Depth, at side, molded	15′ 6″
Draft, light	8′ 2″
Draft, loaded	12′ 6″
Capacity, cubic yards	700
Capacity, tons	975
Shaft horsepower	1400
Speed, loaded, knots	11.25
Speed, light, knots	13.3

ABOVE: **THE GALLEY** shines in stainless steel.

ators, one of which is employed exclusively for propulsion at 565 kw, 600 volts, direct current; shunt wound for separate excitation at 240 volts; the other generator at 310 kw, 240 volts, separately excited for driving the dredge pump motor. The field control of both generators on each engine shaft allows vernier regulation of propeller and dredge pump motor speed.

The shunt wound, 700 bhp propelling motors, located aft of the engine room in a watertight compartment, are also separately excited and drive both propeller shafts up to 190 rpm through single-reduction gear sets. The compound wound dredge pump motor, through the variable field control method, covers continuously a speed range from 190 to 240 rpm. The propulsion motors have direct electrical control both in the wheelhouse and in the engine room, supplemented by three marine telegraphs on the bridge.

The same need for vernier regulation of speeds dictated variable generator field intensely for the control of the two 40-hp, 230-volt, shunt wound, drag-pipe winch motors, which obtain their power from a specially designed motor generator set consisting of a 75-hp motor directly connected to two 35-kw generators, having sufficient differential series field winding to effectively void the residual field when the shunt field is de-energized. Extending the perfection of this form of control to manual manipulation at its source, so - called "finger-tip" weather-enclosed rheostats have been mounted on pedestals in each drag-tender's house. Full voltage may be thus applied in hoisting or lowering the drag pipes by a total lever throw of only 75 degrees, which marks a commendable advance because it enhances the ability of the drag tenders in keeping the drag heads in proper contact with the ocean floor, a technique which determines the speed with which a pay load may be taken aboard.

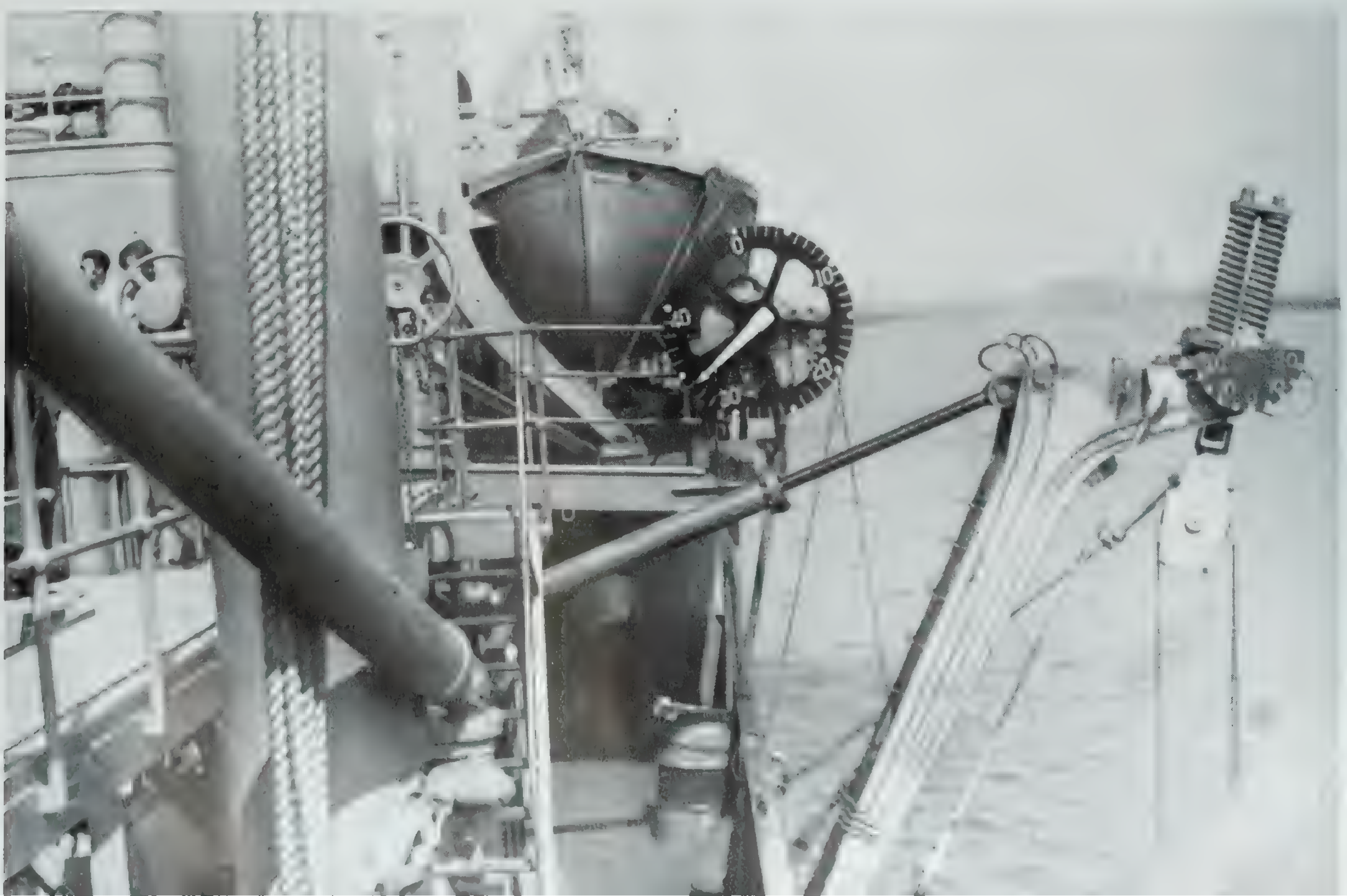
As a supplement toward furthering this technique, the shipbuilder devised a 4-foot diameter dial, continuously self-correcting for the vessel's draft, whereby the distance between the drag head and the surface of the water is constantly shown within full vision of the drag-tender's houses. It is a well-

BELOW: **PORTSIDE** looking aft from the bridge featuring the dials indicating depth and transverse movement of drag head.

FACING PAGE:
UPPER: **PORTSIDE** propulsion motor.

CENTER: **TWIN-SUCTION,** 18-inch dredging pump.

LOWER: **SPACIOUS BRIDGE** and adequate navigation equipment.



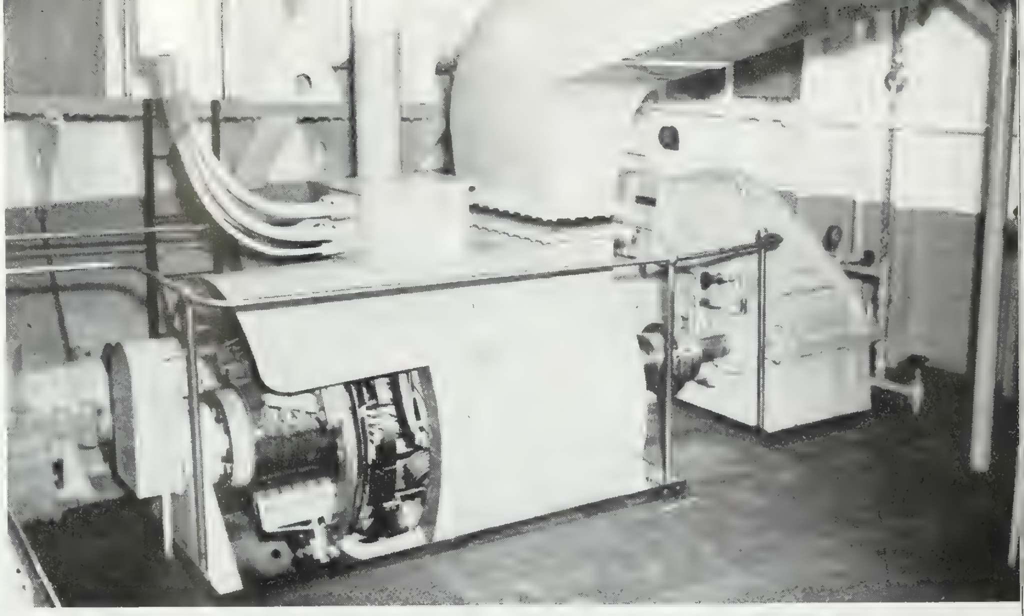
made "Rube Goldberg" that worked. The builder also contributed an indicator on the after drag davits to continually show the transverse travel of the drag head under water; that is, how far it is working under the vessel's hull and how far outboard of it, regardless of the ship's list. This is essentially a safety measure against drag pipe rupture by untoward contact with the vessel's hull.

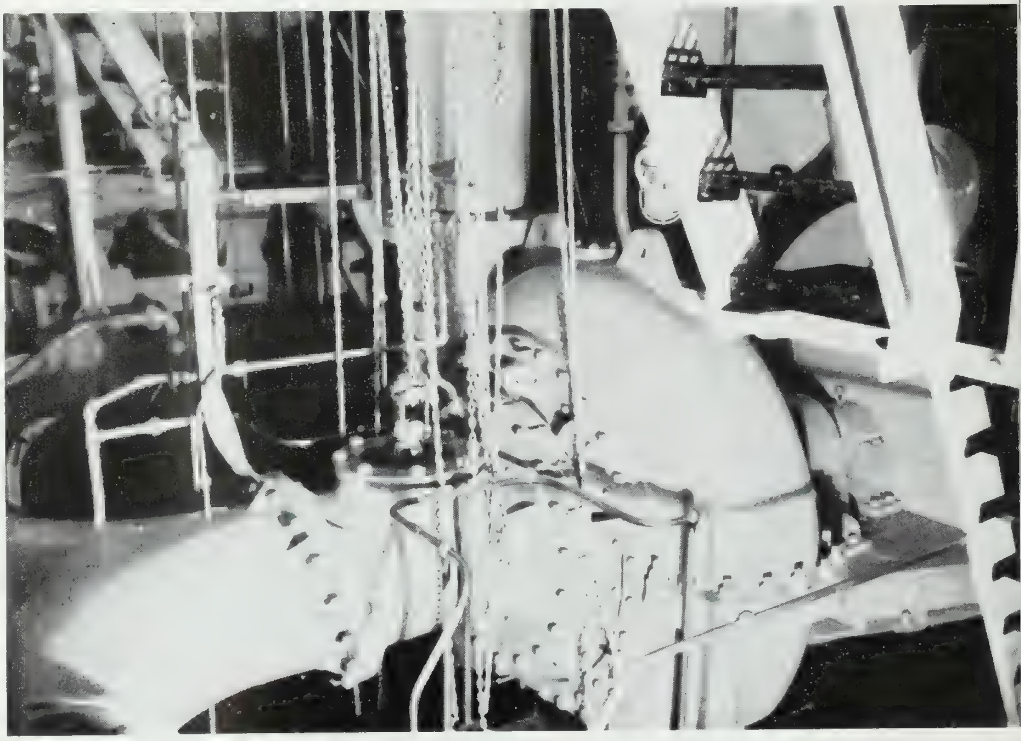
The general arrangement of the dredges is a close parallel to the modern tanker in that the hoppers are 'midships, the bridge and deck personnel in the forward superstructure and the engineer quarters and all victualing facilities aft. Although concentration on space economy was an essential to the arrangement of quarters for a crew totaling 58, liberal provision has been made for crew recreation lounges. The deckhead and side ceiling of the quarters are of incombustible material, neatly worked into panels. The doors are hollow metal, and the steel furniture is finished in mahogany.

The auxiliary machinery, which is conventional for a coastal vessel of this size, is electrically operated from the excitation bus of the main switchboard as well as from an independent 60-kw diesel standby generator set. A 10-kw diesel set serves for emergency requirements. All of the motors, generators and the principal electrical equipment are the product of Westinghouse, a step taken toward uniformity incident to maintenance. Throughout the ship construction and machinery outfitting the full requirements of the Bureau of Marine Inspection and Navigation have been met, with the result that ship delivery was accompanied by the Bureau's Coastwise Certificate.

The contract for this construction was awarded to The Pusey and Jones Corporation in mid-January, 1940. The keels were laid the following June. Both vessels have been delivered, despite an A-1-b priority, well ahead of the contract delivery dates, and have been built for less than three million dollars. Each ship takes its name from a distinguished U. S. Army officer, following the long-established tradition of the Engineer Department.

Both dredges will operate in the Delaware River until the builder's guarantee periods expire.





Star of Scotland

IN AN IMPROVED RIG

THE BOYS IN THE rigging loft of the Los Angeles Shipbuilding and Drydock Corporation are bragging a good deal these days over the performance of their recent work on the six-masted schooner *Star of Scotland*, formerly the four-masted bark *Star of Scotland*, ex *Kenilworth*.

Equally jubilant is K. M. Walker, marine surveyor of San Diego, who designed the new sail plans for this big cargo carrier and designed them along new, original, and carefully studied plans to give her fair speed, ease of handling, and the minimum requirements in crew personnel.

Information on which this article is based was gathered by the author partly from the craftsmen of Los Angeles Ship, partly from Mr. Walker, and partly from the article by F. C. Mathews in the July, 1928 issue of Pacific Marine Review.

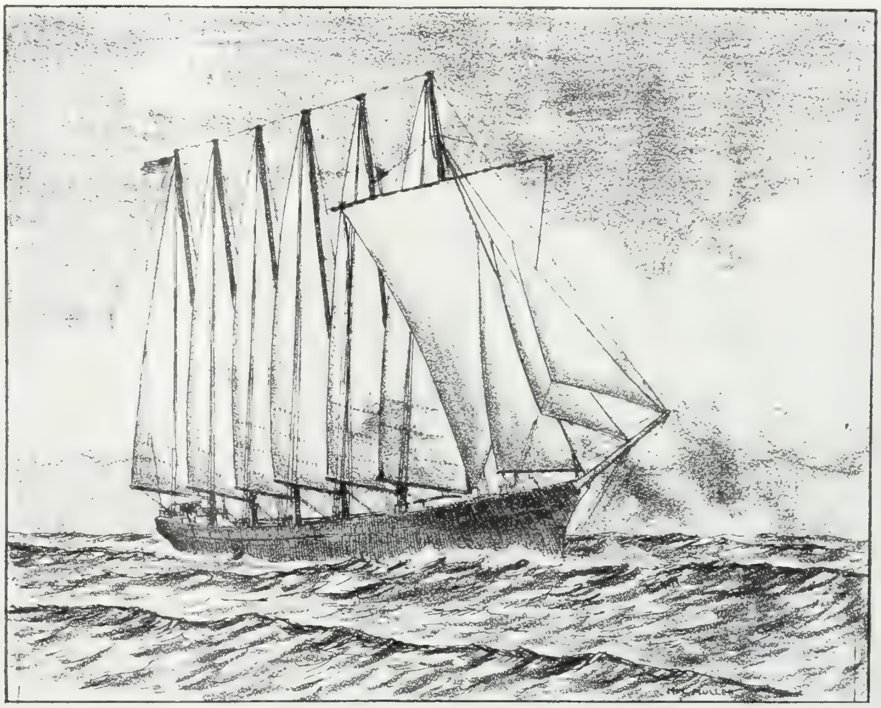
The bark *Kenilworth* was built by John Reid and Co., Port Glasgow, Scotland, and launched in March, 1887. She was delivered to the Waverly Line of Clipper Ships, owned by Williamson, Milligan & Co. of Liverpool, who at once placed her in service on the West Europe-Pacific Coast range.

She is an unusually fine all-steel vessel, being designed and constructed under special survey to Lloyd's highest class.

FACING PAGE: FINISHED and at the dock of the Los Angeles Shipbuilding and Drydock Company.

(Photo courtesy of L. A. Ship.)

RIGHT: ARTIST'S CONCEPTION of the Star of Scotland in her new rig.



Dimensions of her hull are: 314 feet length overall; 43 feet beam; 24 feet depth of hold; and tonnage 2293 gross, 2147 net. She carries a deadweight cargo of over 3000 tons on 21′ 6″ draft.

Kenilworth was beautifully equipped and had elaborate provision for working cargo and ship, and for comfort of officers and crew, including: steam winches for working cargo; steam windlass; bathrooms for officers and crew; condensing apparatus to provide 500 gallons of fresh water daily; fireplace in saloon; and a fine library for crew and officers.

She was loading wheat at Port Costa on the day of the great fire there, August 26, 1889, and was so badly damaged that she was sold at auction and bid in by Arthur Sewall and Co. of Bath, Maine. That firm had her rebuilt by the Union Iron Works, San Francisco, under the supervision of I. E. Thayer, surveyor, and Captain J. G. Baker, who was to be her master.

A special resolution by Congress gave her American registry. She retained her original name *Kenilworth*, had a very good turn of speed, and made one or two runs under the American flag that were almost records, the most notable being that from Valparaiso to New York in 65 days—a record run for modern sailing ships and one that has been beaten only with a very small margin by any of the old extreme clippers.

Kenilworth also has a record slow passage from Philadelphia to San Francisco, round the Horn. Leaving August 15, 1906, she arrived March 16, 1908, 579 days out from the Quaker City. Twice during this period, she was badly damaged by gales at the Horn and put back first to Montevideo, then to Rio, for repairs. The third attempt met a tremendous hurricane in the South Atlantic that laid the ship up on her beam ends, shifted the cargo, and almost was the end of this vessel. However, the crew, after seven days of tremendous labor, got the cargo trimmed and went round the Horn and all the way up the Pacific with perfect sailing weather, arriving at the Golden Gate just 90 days out of Rio de Janeiro.

Shortly after her arrival in 1908, the *Kenilworth* was sold to the Alaska Packers Association, and renamed *Star of Scotland*. Regularly every season thereafter, until 1926, she carried fishermen, gear and provisions up to the Alaska salmon canneries in the spring, and canned salmon and fishermen back to San Francisco in the fall. After 1926 she was laid up at the Alaska Packers terminal at Alameda, California.

Later she was sold to a gambling syndicate who cut off her top hamper, built over her hull an ungainly house, carried full length and extended over her sides on sponsons, and named her *Rex*. After two brief ventures as a gamblers' barge anchored off the Southern California coast, she was towed into Newport Harbor, where she became the local eyesore.

In 1941 it was decided that she had a chance to make good again as a sailing ship, and she was surveyed by K. M. Walker, who recommended that she be given a schooner rig, and was commissioned to design and draw up specifications for her sail plan and hull reconstruction.

Mr. Walker was familiar by long experience both in design and operation with both schooner and square-rigged sailing vessels. After considerable study of the problem, he decided to recommend a new idea in cargo sailing vessel rigs. This was to use an adaptation of the Marconi rig that has been so successful in sailing yachts.

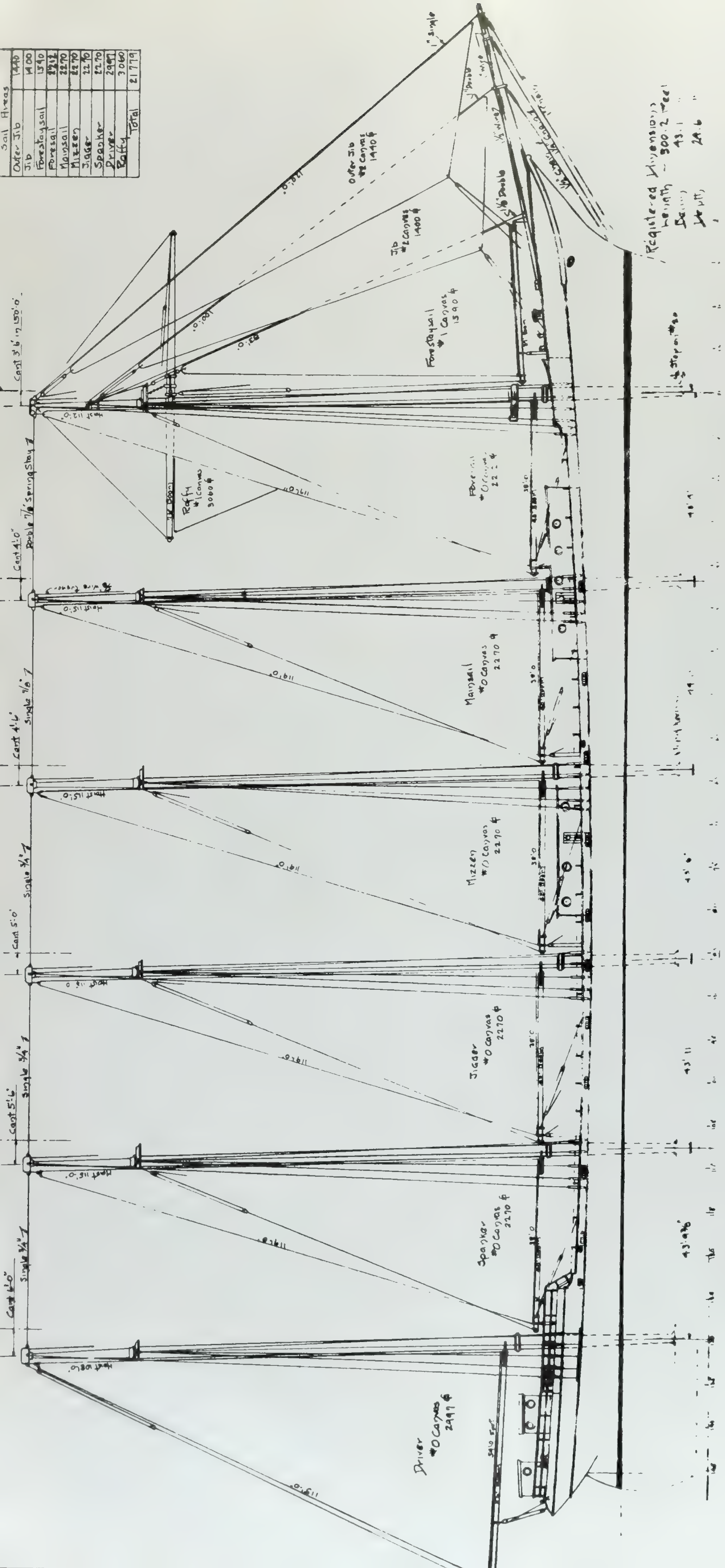
With considerable reluctance, the owners consented to try this new idea. The result is shown in the illustrations. It will be noted that the throat or tip of the triangular sails is raised to the tip of each mast, or considerably higher than the ordinary set of the throat of a schooner mainsail with gaff. With these big triangular Marconi type sails, a single halyard hoists and sets the sail. This halyard runs right over the mast tip (in a special two-sheave truck fitting) and down to a manually operated crab winch, fitted with a five-to-one and a forty-to-one gear. One seaman easily hoists the sail on the five-to-one gear until the weight of the boom comes on the canvas. He then shifts to the forty-to-one gear and cinches the sail to the proper set.

When this unusual and novel rig was made public, it drew much criticism and many a shellback declared that the old *Star of Scotland* would never get anywhere without a tug in that suit of sails. Even the marine underwriters were scared. Mr. Walker, however, had both mathematics and experience to back up his theory that the area of the gaff type of sail abaft of a line from the outer end of boom to the throat of the gaff had never been of much use in any other condition than running free before the wind. In his sail plan, the raffy sail supported on a yard on the foremast made up for much of the area lost by eliminating the gaffs, and so, in running free before the wind, the ship had practically the same sail area as the ordinary baldhead schooner rig.

The final proof is always actual experience in use, and by that criterion this sail plan is now completely vindicated. The *Star of Scotland* arrived in Johannesburg, South Africa, a couple of months back, and Captain Flink writes from there:

"The ship logged 17,000 miles through calms and gales without the slightest trouble, and made an average speed of 140 miles a day. All hands are very satisfied with the ship; she is easy to handle in any kind of weather."

To those familiar only with steam or motorship records, 140 miles a day may seem very slow. However, the distance run is approximately the same as that logged in many New York-Cape Horn-San Francisco passages of the old clipper ships, and, to average 140 miles a day, that passage would have to be made in 121 days, which would be a very good average passage. The *Kenilworth* in her approved square rig made four passages from New York to San Francisco under Captain Baker in 116, 144, 115, and 118 days, and one from New York to Astoria in 119 days, or an average of over 122 days. She had recorded runs of 320 miles a day or 13¼ knots speed under square rig.



PROFILE SAIL PLAN OF STAR OF SCOTLAND IN HER NEW SCHOONER RIG

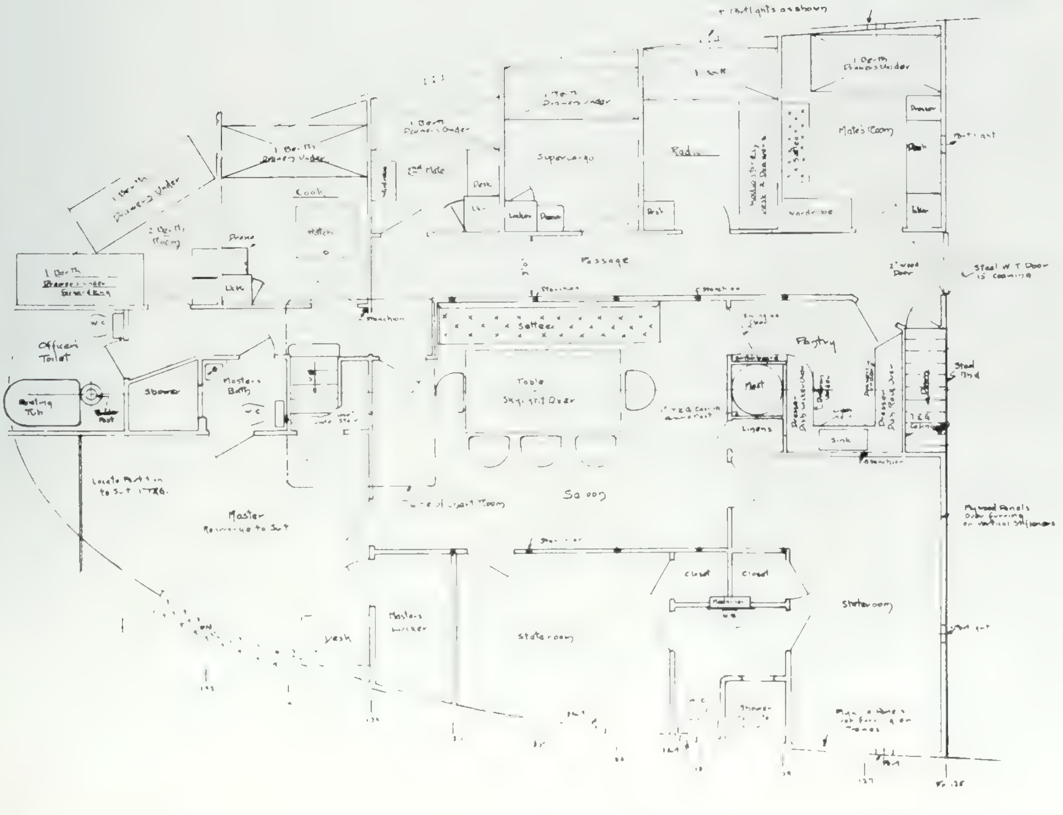
The average speed of 140 miles a day over "17,000 miles of calms and gales" therefore vindicates the modified Marconi rig designed by K. M. Walker as being fully equal to the original square rig of the *Kenilworth*. This vindication appears all the more complete and remarkable when we consider: that the steel hull of the *Star of Scotland* is not that of a new vessel designed for this rig, but is in fact a veteran of fifty-five years of sea service, wherein it has received more than the ordinary quota of burnings, batterings, and general abuse; and that this rig is handled by 12 seamen, whereas the former rig required a crew of over 40.

Our congratulations to Mr. Walker on the success of his unique rigging plan and to the riggers of the Los Angeles Shipbuilding & Drydock Corporation on their fine workmanship.

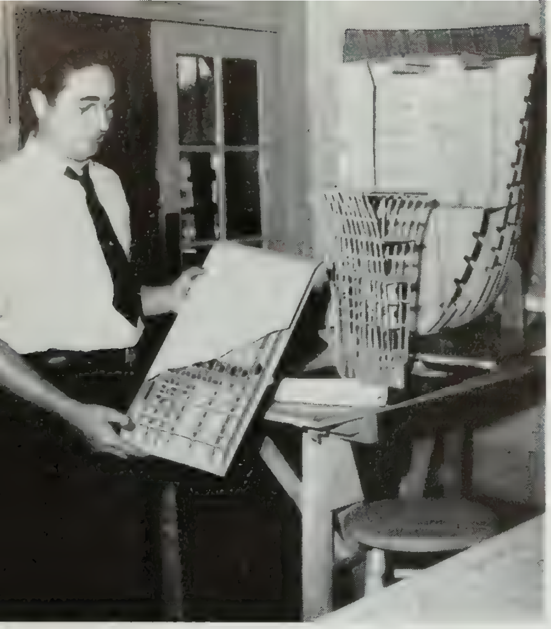
KENILWORTH (now Star of Scotland) laid up on her beam ends in the South Atlantic. (From sketch made expressly for Pacific Marine Review by the late W. Francis.)

Four-Masted Bark Star of Scotland

IN THIS RIG she served the Alaska Packers Association between San Francisco and Alaska cannery ports for many years as a fishing vessel.



PLAN OF CREW quarters in the poop of the Star of Scotland



Shipbuilder

A CLEARING HOUSE FOR IDEAS ON THE WAR-WINNING JOB OF WHOLESALE PRODUCTION ON SKILL IN THE MARITIME CRAFTS

The Foundation FOR THE SHIP

III Origin of Some Ship Terms

In our last installment of this series of articles, we showed how the embryo of the present ship forms is found in the earliest vessels of which history has any record, and we described the Viking ship, which was a very good example of this truth.

Long before the days of the Viking vessel, which was essentially a pirate or raiding vessel, the peoples of the Eastern Mediterranean had brought the commercial oar- and sail-propelled ship to a high state of development.

Two- and three-deckers of fairly large capacity carried Roman produce to Alexandria and brought back food for Rome. Tyre and Carthage had large fleets trading with the Iberian Peninsula, and even as far as Britain. The clashes between these commercial fleets formed one cause for the Punic Wars.

These ships had terrific experiences with storms, and these experiences led thinking mariners to suggest improvements, just as similar experiences excite the inventive capacity of seafarers today.

Dr. Luke in the Book of Acts in the Bible describes a journey from Caesarea to Rome by ship in the First Century. After long days and nights of battling with a storm, they found on casting the lead that they were in shallow water. So "they cast four anchors out of the stern and wished for the day." Greek historians tell us that in the Seventh Century, B. C., the Sythian philosopher Anacharsis, en route by sea to visit his buddy Solon at Athens, noticed the sailors having trouble getting the anchors to hold. He examined the anchor which was shaped somewhat like a fishhook. "Why," said he, "do you not make these anchors with two hooks, or even four, so that when they turn over they will still stick in the bottom."

LET'S SWAP IDEAS

There are hundreds of you supervisors and instructors and thousands of you trainees in the schools that are trying to produce shipyard craftsmen and merchant seamen. Pacific Marine Review wants to help you, and in order to do so with some degree of intelligence, Pacific Marine Review would like to see you all swapping ideas through the medium of this training section.

There is probably not one of you to whom at sometime or other it has not seemed that the system, or the lesson, or the practice period might have been better if changed according to your ideas.

Send us in those ideas. Perhaps, put together with other ideas, they may be of great help.

We do not have records of the beginnings of most improvements to the hull, but we can almost assume that most of them came in just this fashion.

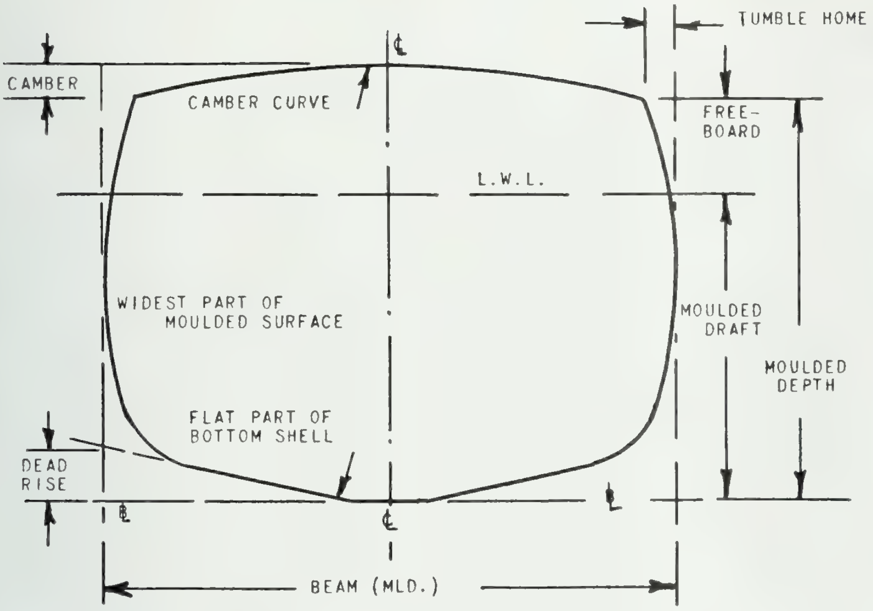
Undoubtedly, some thoughtful individual noticed in a storm the great stress and strain on flat decks when great seas fell on them. An arched frame would immediately suggest itself both for strength and for more prompt drainage of the sea water. So we have *camber,* or the transverse curvature of the deck, making the center higher than the sides.

The same person, or some other, noticed how the bow dived into the waves and got the idea that more surplus buoyancy at that point would cure the trouble. So we have bow sheer, or the upward curvature of the sides and deck of a vessel toward the bow or forward

And Seaman Training

RIGHT: Two comely burner trainees.

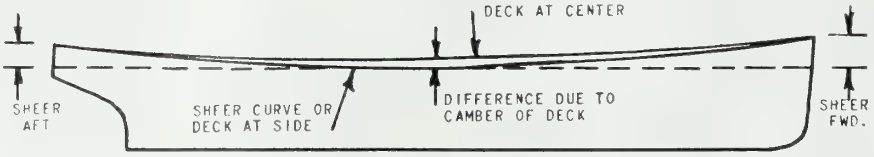
FACING PAGE: Mockups of ship parts help trainees visualize the structure.

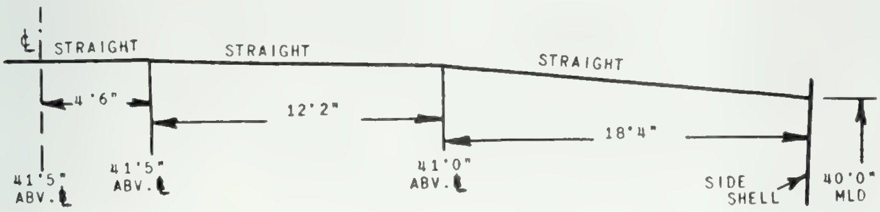


ABOVE: OUTLINE of midship section showing application of ship terms.

RIGHT: OUTLINE PROFILE of hull showing sheer curve.

BELOW: AN OUTLINE half body section of deck showing straight line and angle camber used in ships having longitudinal bulkheads.





end, and *flair,* or the outward curvature of the sides just aft of the bow.

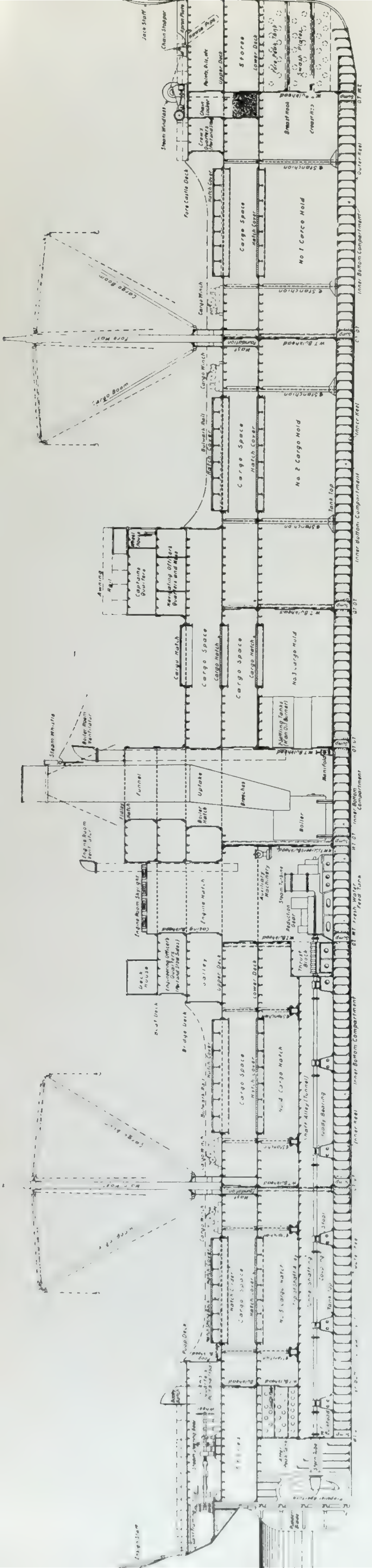
The same idea presents itself in the same way for the stern and we get stern sheer. In the same way would be started the inward curve, or slant of the ship's side above the point of greatest width. This is called the *tumblehome.*

Marine architects have learned to so proportion these factors, *camber, sheer, flair, and tumblehome,* as to greatly improve appearance, and at the same time keep decks as dry as possible. The application of these terms to the ship form are shown in the diagrams herewith.

These features were all incorporated in commercial ships in the very early stages of ship form development. Then in the Middle Ages came all sorts of grotesque additions, particularly on naval vessels, which practically meant all vessels, since in those times every vessel that put out to sea had to be prepared to fight.

So they built forts or castles on the bow and we get our word *forecastle* (usually shortened to fo'c's'le), meaning a large high structure at the bow of the ship, on which knights and men at arms stood ready to engage the enemy, and meaning today the forward end of the ship, with or without a raised deck, and specifically meaning the seamen's sleeping quarters, which until quite recently were always located in this space, usually with a short raised deck over the space.

The old ships had no midships bridge, and were all steered, navigated and managed from a raised deck at the stern. In very early times, this raised portion of the stern came to be known as the *poop.* Under this raised



INBOARD PROFILE OF CARGO STEAMER SHOWING VARIOUS SPACES, POOP, FORECASTLE, BRIDGE HOUSES.

deck, the officers and passengers were housed.

Just why it was named poop, we do not know. The word is said to be derived from poppa, Italian for father, and hence related to pope. Since the master of a ship was supposed to take care of his crew, and was generally spoken of as the "old man," or father, the name might have come that way. Some suggest that it was a term used in derision by the seamen to suggest their idea of the people who lived in that part of the ship. At any rate, the name has stuck.

Standing on his poop, the master of a sailing ship has a complete view of the rigging and can see just what all his sails are doing. In the old days, he steered with a large oar or board set over the side of the ship and hung in such a fashion that it had limited movement vertically and horizontally. This board was always hung on the right hand of the steersman as he faced forward, or toward the bow. So we get the name steerboard side, or starboard side for that side of the vessel.

Naturally, this steering board had to be protected so the other side of the ship was always brought up against the land or the dock when making port. Therefore, this left side (looking forward) had a ladder board fixed on it for landing, and came to be known as the ladderboard or larboard side. In the noise and confusion of fighting with fire arms, these two words were too much alike to be easily distinguished, so larboard was changed to *port*. Remember that these direction terms on a ship were originally started from the point of view of a man standing on the poop deck (that is the stern or after end of the ship), looking forward over the deck. Starboard is on his right hand; larboard, or port, is on his left hand.

In steering orders, the terms port and starboard have been changed to left and right, respectively. However, in the plans and detail drawings of a ship the old terms are retained and the majority of the members of a hull are made in pairs, one starboard, the other port. So in all shipyards, you will get directions using these terms, such as: "You will find Mr. —— in the lower tween decks No. 2 on the starboard side" or "This bracket goes to frame No. 10 starboard side in the chain locker."

On the poop deck of a sailing ship, we find other terms that have come down into modern ship terminology. The master of a sailing vessel had need to know how fast his ship was traveling through the water as well as to know the direction in which she was going. So we find all the old sailing ships equipped with a very interesting device known as a "chip log." This was a quadrant about six inches in radius cut from a thin smooth wooden board and weighted on its curved side with lead so that it floated in the water with the point up and a little above the surface. This quadrant is made fast to a line by a three-part bridle, which is arranged to release the lower parts when a strain is put on the line to pull in the quadrant.

On the log line, 15 to 30 fathoms from the quadrant, a piece of red bunting is tucked through the strands. From this point on, the log line is divided into sections marked by pieces of cord with knots in their ends. Each of these sections is called a knot. The log line is carefully wound on a reel suitably mounted on the rail at the after end of the poop (taffrail). Close by on the rail is a mounting for a sand glass. The knot (sections of the line) must have a length bearing the same ratio to the nautical mile as the rating of the sand glass in seconds bears to the number of seconds in an hour. If correctly adjusted, then the number of knots passing over the rail in the time taken by the sand to run through will be a measure of the speed of the ship in nautical miles per hour.

Two standard sand glasses were in use, a 28-second glass and a 30-second glass, the former being practically universal in the merchant marine. For the 28-second glass, the knot section must be exactly 47 feet three inches; for the 30-second glass, it must be 50 feet eight inches, the nautical mile being taken as 6080 feet.

The knot is therefore a unit of speed and is properly defined as one nautical mile per hour. It is somewhat incorrect and very land-lubbery to speak of a ship sailing or steaming "10 knots an hour." You should say steaming "10 knots," which means 10 nautical miles per hour.

TODD TRAINING IN SHIPBUILDING CRAFTS

WHEN THIS WAR is finally won, there is going to be many, many more mechanics available than was ever the case in the long history of this mechanically-minded republic. Out of every war some good accrues, paradoxical though it may seem. As an illustration, radio was one of the principal developments from the last war. This war is going to contribute thousands of mechanical experts, particularly in the field of shipbuilding and ship repair.

When the United States was dragged into the conflict, the shipyards were going at a speed believed to be tops. But as the demand for more new ships and ship repairs grew, it was found that the "tops" was very near the bottom. The back log of orders piled up and yard operators began looking around for mechanics to speed the work along. They found there was a scarcity of competent men and that the scarcity was growing.

What to do? There was but one answer—train men in the fields where the shortages were acute. But the old system of shop training would not do. It was much too long. The need was for the greatest number of men in the shortest possible time.

The Todd Shipyards Corporation solved the problem by opening training schools in several of its yards; the Todd-Bath at South Portland, Me.; the Todd Erie Basin Dry Docks in Brooklyn, N. Y.; The Todd Hoboken Dry Docks at Hoboken, N. J., and the Todd Seattle-Tacoma plant at Tacoma, Wash.

Today these schools are going "big," not only with the management but with the workers as well. This is attested by the fact that the number of applicants at all times is greater than can be handled with the facilities available, and there are long waiting lists at each of the training centers.

The first requisite for enrollment is that a man be an employee of the plant to whose school he applies for admission. He must have been on the pay rolls for at least 30 days and be either a laborer or helper to a mechanic. He must be recommended by a leadman and the mechanic. A brief aptitude test is applied, and, if he passes, he is then enrolled and goes to, what for him probably, is the strangest school he ever attended. It would be strange to almost anybody, as a matter of fact, for the orthodox methods of teaching are only of the surface variety.

No "professor" or other type of pedagogue runs the class. Instead, the instructor is a practical mechanic who has shown an ability to impart his knowledge of theory and practice, and who is thoroughly acquainted with and practices the higher standard of work which is demanded by all Todd yards. Textbooks are used, but instruction is given in other and perhaps more practical ways. Blackboard work is frequent in all classes. Movies and still pictures of various types of work are shown, but, more important, the student also puts in a certain amount of time on an actual job, so that his training work also becomes a part of the production of the plant.

Plant management has been surprised, if not amazed, at the speed with which the average student fits himself for a specialist's job. It was anticipated that at least three months would be required to train a man sufficiently to permit him to go on the job under a leadman. The fact is that a big majority of the men have completed their training in sixty days, and an astonishing number have been ready for their chosen work in thirty days.

Another fact that has surprised—and pleased—the plant management is that the men have freely given of their own time to attend these classes. It is required that they spend at least four hours a week in classrooms on their own time. This they have been very happy to do. This is all the more arresting when one learns that the classes go around the clock in some of the plants, particularly at Tacoma and Bath.

The job training program is under the general supervision of Professor H. L. Seward of Yale University, but every plant has its own "superintendent" of schools. In each instance he is a man who has the required technical education plus the knowledge of its practical application. But the real instructors, as stated before, are experienced, skilled mechanics whose hands are calloused from work but who know how a job should be done and see to it that it is done properly.

Not all plants have the same curricula; these vary with the need of the yard. In the Seattle-Tacoma area stress is laid on hull design. Here the ship-fitting students work with scale model hulls of vessels which are actually under construction, learning how to read blue prints, the names of the various parts of a ship, the assembly of parts for welding and loft work, which is the making of patterns and templates for parts of the ship. In other classes there are electrical work, inside and outside machinists, pipe fitters, welding, riveting and oxy-acetylene burning.

At the Todd-Bath plant all green men who go on the pay roll are required to take a course covering eight hours of instruction on the company's time, during which they are taught ship terms, lines, the structural parts of a ship and elementary blue-print reading. The regular classes include ship fitting, pipe fitting, sheet metal working, welding and oxy-acetylene burning. This plant also has a class in which job instruction and supervisory responsibility are taught and is preparing to set up a class for the upgrading of ship fitters' helpers.

Maine, like the other New England and Eastern Seaboard states, is famous for the "little red schoolhouse." It is interesting to note that most of the classes of the Todd-Bath yard are held in one of these schools, no longer used by the State, and which is located close to the yard. This yard, too, has a regular apprentice course which is operated in cooperation with the Maine school

(Page 83, please)

News FROM THE PACIFIC NORTHWEST

by Daniel L. Pratt

Associated Completes British Ships

"J-814," last of a series of mine sweepers constructed for the British Government, at the Lake Union plant of the Associated Shipbuilding Co. of Seattle was launched on August 12. The ceremony had a real international flavor. Among those who witnessed it were thirty-six young men who a few minutes before had been sworn into the Navy by Lieut. S. W. Fraser, officer in charge of the Seattle recruiting district. Present also was Lieut. H. R. Shaw, Royal Navy Reserve, liaison officer on mine sweepers for the British Navy.

Miss Marcheta Anderson, niece of **J. A. Bale,** dockmaster at the plant, was the sponsor. She was aided on the launching platform by **Miss Jean Schwenk,** her flower girl. The sponsor took time before the launching to congratulate the volunteers who were part of a group of 65 who left that day for the training station at San Diego.

River Steamer Becomes Ocean Tug

The former 97-foot Columbia River steamer *Mohawk* has been transformed into a seaworthy and powerful deep-sea tug and has been renamed the *Paula*. She was built 21 years ago at Friday Harbor for service in the San Juan Islands, and was later changed from steam to diesel at two plants at Portland. The vessel is owned by the Upper Columbia River Towing Co., headed by **Capt. A. Lappeluoto** of The Dalles. New equipment consists of two small diesel generators to supply power for the new auxiliary machinery and equipment, comprising: an electric anchor winch; a towing engine; a steering wheel; arc welding equipment for making repairs; a hot water system; a refrigeration system; an oil burning galley and many other items. Conversion was designed to equip the boat for towing barges for oil and lumber along the Pacific Coast.

U. S. A. V. P. MOBJACK launched August 2 from the Lake Washington Shipyards, Houghton, Wash.

Oregonship Receives Third Merit Award

On August 19 the **Oregon Shipbuilding Co.** received its third Award of Merit from the Maritime Commission for outstanding ship production. Last April the company received the first "M" award pennant covering the first quarter of 1942 on Liberty ships. In July it received a gold star for having delivered into service one ship from each of its eleven ways in an average of less than 105 days from keel-laying. The new award, another gold star, is for maintaining that average.

New Navy Base Dedicated

The new Farragut Naval Training Station, at Bayview, Idaho, on Lake Pend Oreille, was dedicated August 2 before a crowd estimated at 25,000 and representing nearly every state in the Union. This dedication affects only Camp "C," the first completed unit, which handles 5000 trainees in a class. **Lieut. Commander H. G. Clark,** naval engineering officer, accepted the completed unit for the Navy, and presented it to **Capt. H. R. Sperry,** representative of **Admiral C. S. Freeman,** commander of the 13th Naval District. The new station will be second in size only to the Great Lakes Training Station, and will cost $48,000,000.

New Seattle Navy Hospital

The U. S. Navy has opened near Seattle, the largest and most modern naval hospital north of San Francisco, a $4,000,000 project built from scratch since the first of the year. The two Medical Corps officers in charge are **Capt. F. F. Murdoch,** the commanding officer, and **Capt. H. V. Hughens,** the executive officer. The project covers a tract of 165 acres. Thirty-six one-story units are provided, and 800 beds will be available.

Neah Bay Main Channel Closed

Construction of a breakwater at Neah Bay, now a reality after many years of demand by fishermen and mariners, has necessitated a change in the entrance channels. The north or main channel has been closed, and all ships now must enter or depart through the east entrance. A map and description of the buoys and lights marking the east entrance channel may be obtained from the Coast Guard.

Ninth Destroyer Launched at Seattle

Ninth of the series of destroyers under construction by the Seattle-Tacoma Shipbuilding Corp. Harbor Island plant, was sent down the ways August 10. She was christened *Thompson,* bearing the name of the late **Col. Robert Means Thompson,** the sponsor being **Miss Sarah Thompson Ross** of Ontario, California, great-grandniece of Col. Thompson.

Four New Rescue Tugs For Bellingham

To the **Northwestern Shipbuilding Co.** at Bellingham has been awarded by the U. S. Navy a contract for the construction of four 166-foot wooden Navy rescue tugs. Work already on hand for this yard includes two mine sweepers for the Navy, five combination freight and passenger boats for the Army, and three Navy barges. Bids have already been made on six 150-foot seagoing wooden tugs for the U. S. Maritime Commission.

Two New Tankers From Tacoma Yard

Headquarters of the 13th Naval District announced the launching from the Seattle plant of the **Seattle-Tacoma Shipbuilding Corp.** of a small, fast oil tanker on August 16. She was christened the U. S. S. *Patapsco,* after a river and estuary forming the harbor of Baltimore. The sponsor was Mrs. W. S. Zane. A second tanker of the same class is to be launched shortly. On August 23 the Tacoma plant launched its second aircraft carrier of the auxiliary type. She is named U. S. S. *Prince William,* and was christened by Mrs. Paul Foley, wife of a Navy lieutenant. The first, a carrier, U. S. S. *Crotan,* was launched August 4.

Marine Shorts

Ultican Shipyard at Cosmopolis, Wash., had launched late in July the first of its five barges with the rest 99 per cent complete. The work was delayed considerably by lack of skilled calkers. A new contract for $500,000 worth of larger barges for the Navy has already been placed.

* * *

Chester E. Gunderson of Gunderson Bros., Portland, stated that contracts were definitely signed July 15 in Washington for construction by his company of 1000 plywood lifeboats, first of their kind built. They are ordered by the Maritime Commission.

* * *

The War Shipping Administration's Pacific Coast Division for the issue of shipping license permits is in full operation. **W. S. Tate** is head of the Northwest section, with headquarters in Seattle; and **Hiram V. Walker** is head for California, with headquarters in San Francisco. Mr. Tate is on leave of absence from his position as Northwest secretary of the Westbound Conference; and Mr. Walker from Williams, Dimond & Co.

* * *

Marine Short-Shorts

Citizens Defense Corps Volunteers in tidewater areas of the State of Washington have been enlisted in the Civilian Mine Watch Force of the 13th Naval District to assist in reporting and guarding unexploded mines. . . . The once mighty guns of the old battleship *Oregon* shall never sound again. Used recently as a training ship, Oregon tried to get her restored as a fighting vessel, but the Navy has decided against it. . . . Puget Sound Coast Guardsmen now have their own hospital ship, a 42-foot cruiser, formerly known as *Miss Boise,* but now listed as *C.G.R.-784.*

ON AUGUST 10 Miss Sarah T. Thompson Ross christens the U. S. S. destroyer Thompson at the Seattle plant, Seattle-Tacoma Shipbuilding Corp.

Personal Gleanings . . .

Russia's first woman sea captain, who takes her ocean-going freights across perilous seas to carry war supplies to her country, was in Seattle recently, en route to an unnamed port to assume command of a new ship. She is **Mrs. Anna Schetinina,** aged 34 years, who will receive the Order of the Red Star from a grateful government when she arrives home. She already holds several other awards from her government for her exploits as a war skipper. . . . **Dwight Hill** of Seattle, formerly general agent for the American President Lines at Hongkong, reached Portuguese East Africa and has embarked for this country on the Swedish liner *Grisholm.* He is one of the Americans from Japan-occupied areas in the Orient who are being exchanged for Japanese officials and nationals.

News FROM THE PACIFIC SOUTHWEST

by K. M. Walker

L. A. Manufacturer Expands

I. H. Grancell, manufacturer of joint sealing compounds, moved into a new factory at 1601 East Nadeau Street, Los Angeles, California, on September 1. Floor space of the new plant is four times greater which, with additional manufacturing equipment and increased personnel, considerably increases the firm's capacity.

Mr. Grancell has been a leading figure in California machinery circles for nearly forty years. Coming to Los Angeles from the East as a young man, he became associated with Ducommun Metal & Supply Company and later with Smith-Booth-Usher Company. Since about 1915, he has conducted his own business, manufacturing various lead products. Associated with him have been two sons, Alvin, now in the U. S. Army, and Sherman, now general manager of the company.

Expansion of the producing capacity of the firm was made necessary due to contracts for these products with the U. S. Navy, Naval Air Force, industrial firms, shipbuilding plants and oil refineries.

A modern laboratory is being constructed at the new plant, and the organization offers the facilities of this laboratory and its personnel to shipbuilding plants for joint sealing and lubrication problems.

MISS BETTE DAVIS OF MOVIE FAME christens one at Calship. The big yard is now pushing them off at the rate of twelve every month.

Mormac Office in L. A.

Moore-McCormack Line has opened an office in Los Angeles. With Pacific Coast headquarters in San Francisco, Mormac had already opened an office in Seattle, and one in Portland. This office in Los Angeles completes Pacific Coast coverage.

It will be in charge, at least temporarily, of L. E. Archer, Mormac passenger traffic manager in New York, and well known in Western States as the former Pacific Coast passenger traffic manager of the Panama Pacific Line.

The Mormac Lines is expecting a great increase in shipping activities at Pacific Coast ports with the diversion of Latin-American shipping to this section.

Shipyard Workers Trading Posts

At the Wilmington yard of Consolidated Steel there are two trading posts, one near each of the two main gates. These are set up with the idea that combined they will serve as a clearing house for many of the problems affecting the 12,000 employees of the yard. They are open in the between-shift periods and are served by seven full-time employees.

They handle all lost-and-found articles; all housing problems; insurance; badges; tire rationing difficulties; secure transportation or riders for empty seats; sell War Savings Bonds; and dispense information on any of the many problems affecting the economic and social life of the employees.

Port Authorities Meeting

At the annual meeting of the Pacific Coast Association of Port Authorities held at the U. S. Grant Hotel in San Diego on August 1, **K. K. Reid,** of New Westminster, B. C., was selected to succeed **Major R. H. Van Deman** of San Diego as president. **F. A. Sargent** succeeded **Joe Brennan** of San Diego as secretary-treasurer while the organization's new vice presidents are **George J. Moore** of Los Angeles and **F. G. Tegtmeier** of Everett, Washington.

The directors for the new term are **K. J. Burns,** port manager of the Canadian National Harbors Board, Vancouver, reelected; **W. R. Martin** of Long Beach; **F. H. Marvin** of Tacoma; **James J. McElroy** of Oakland; **Henry Ohn** of Stockton; **T. H. Banfield** of Portland; **O. W. Gustafson** of The Dalles, Oregon; **W. J. Murphy** of Grays Harbor; **O. E. Beebe** of Bellingham; **Nels Weeborg** of Everett; **T. H. MacComber** of Vancouver, Washington; **Martin Gottfield** of Olympia; **Henry W. Davies** of Port Angeles; **F. W. Gowdy** of Longview, Washington; **George Casseday** of New Westminster, B. C.; **H. P. Chapman** of Seattle; **R. R. Bartlett** of Astoria; and **T. C. Brooke** of North Fraser, Canada.

The next annual meeting of the Association will be held at Vancouver, B. C., during the summer of 1943.

The three principal matters under discussion at the meeting just brought to a close were:

1. Government ownership or control of tideland facilities by contract, lease, purchase, or emergency war power acquisition, and the protection and preservation of corporate municipal and state rights and title.

2. Efficient wartime operation of port facilities by corporate, municipal or state authority as against operation by Federal agencies.

3. Post-war restoration and rehabilitation of port facilities and the operation and resumption of foreign and domestic waterborne commerce.

The two-day conference was addressed by **C. W. Flesher** of Oakland, regional director of construction for the U. S. Maritime Commission, who stressed that rehabilitation of the nation's mercantile marine is the Commission's principal aim, and that, following the present war, there will be no ghost fleets left to rust and decay in forgotten back waters, and that the Commission is guarding against the mistakes made during the period following World War I. He also stated that the United States is faced with the opportunity to transport the major part of the world's waterborne commerce due to the post-war scarcity of foreign bottoms certain to follow the cessation of hostilities.

Admiral Vickery Inspects Concrete Shipyard

Rear Admiral H. L. Vickery, on a nation-wide tour of shipbuilding plants, inspected the plant of the Concrete Ship Constructors at National City, California, July 30, and, while urging the personnel on to greater effort towards the launching of two of the concrete tank barges during October, expressed himself as well pleased with the progress shown to date. The first ship, due to lack of experience with this type of structure and the necessity of working out structural details and all methods of procedure, has required more than the anticipated amount of time to construct but is rapidly approaching the launching stage, while the second hull, profiting by the lessons learned on the first, will follow close behind.

This yard now has contracts for 22 of the reinforced concrete oil carriers, and is building a second two building docks to speed the delivery schedule in the hope of completing one ship a month during 1943.

San Diego Shipyards Busy

With their building ways occupied for the most part with Government contracts, the San Diego shipyards are crowded with the greatest construction program in their history.

At the **Lynch Shipbuilding Company** two 103-foot military transports were launched within a period of eight days. On July 30, the first of these vessels under their contract with the Government was launched at noon with **Mrs. Georgia A. Lynch,** aunt of **Frank C. Lynch,** company president, as sponsor. This was followed on August 7 by a second military transport under the sponsorship of four-year-old **Miss Virginia Stevens,** daughter of **Mr. and Mrs. G. W. Stevens.** The sponsor's father is the oldest foreman at the Lynch yard in point of service.

The **San Diego Marine Construction Company** launched the sixth of the 136-foot mine sweepers for the Navy on July 30, with **Miss Ruth May Davidson** acting as sponsor. Miss Davidson is the daughter of **Alden C. Davidson,** an employee of the shipyard. While the San Diego Marine Construction Company is busy with a number of mine sweepers on the ways and at the outfitting dock, they are also building the 65-foot double-ended, flat-bottom harbor ferry *Juanita* for the **Star & Crescent Boat Company** of San Diego.

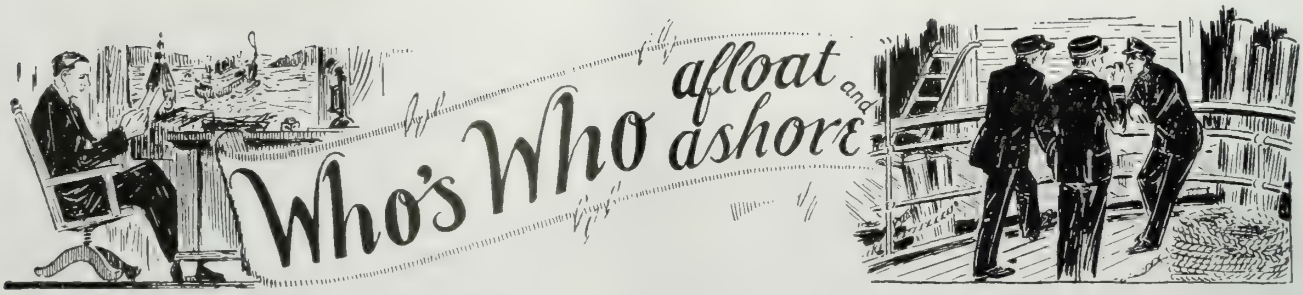
The Campbell Machine Company have completed the new mold loft and drawing office building to facilitate the construction of their program of naval mine sweeper construction. The first of these vessels is well under way and others are taking form in the building berths recently vacated by the last of the bulky tuna clippers, of which the Campbell Company has turned out a steady stream over a long period of years. The last tuna boat to be built at the Campbell yard is a 75-foot "baby clipper," now on the marine railway and scheduled for early launching. This boat was built for their own account and is to be powered with a 125-horsepower Union diesel engine.

At **Pete Rask's Harbor Boat Works,** six 38-foot buoy boats are in frame, and are the first vessels to be built since this plant was moved from their old Belt Street location to the new shipbuilding area near the foot of 28th Street. A spacious new office building has been erected, completely finished in knotty pine, and the new plant buildings are being built as fast as possible with the existing scarcity of labor.

Tuna at Point Loma

With albacore fetching $340 a ton, schools of these unpredictable fish appeared close to Point Loma for the first time in over ten years with the result that the San Diego jig boats are literally reaping a harvest. Some of these boats, among the local fleet of about 50 vessels, have been bringing in catches worth $200 a day, while, until recently, they have been earning a precarious living fishing for the fresh fish markets.

The larger boats, including the long range tuna clippers, have also been bringing in some record catches and reaping the benefit of the prevailing high prices. The clipper *Olympia* returned from a trip on the Lower California banks with a cargo of 97 tons of yellowfin and skipjack valued at better than $18,000.



Who's Who afloat and ashore

Edited by Jerry E. Scanlon

San Mateo Marine Academy

Uncle Sam's gigantic program for naval expansion and American merchant marine development was further advanced with the dedicatory ceremonies of the new United States Merchant Marine Cadet Training Academy at San Mateo (Coyote) Point, San Mateo County, on Saturday, August 29.

All officers and cadets formerly based at Treasure Island are now at the new training headquarters, declared to be the finest in the country.

With appropriate ceremonies attended by ranking Navy, Army, Federal, State, civic officials and steamship leaders of the Peninsula, San Francisco and the East Bay, **Captain Edward Macauley,** United States Maritime Commissioner, was the principal speaker. He came here from Washington especially for this occasion, accompanied by **Captain L. M. Tomb,** USNR, Superintendent of the Merchant Marine Academy, Great Neck, Long Island.

Lieutenant - Commander Ralph Sheaf is in charge of the new school, and in his address Captain Macauley paid glowing tribute to the indefatigable efforts of Lt.-Comdr. Sheaf and the officers under him in handling all details of the construction and opening of the academy.

There are 370 cadets training at the academy under Lieutenant-Commander Sheaf and his fifteen officers. **Lieutenant-Commander Raymond Eisenberg** is the executive officer and **Lieutenant Raymond Keyes,** USNR, is the educational officer.

The school is one of three in the United States for training the future officers for our merchant marine. The others are located in New York and New Orleans.

The selected applicants having three years' high school receive a two-months basic training course at the academy, followed by six months of practical training at sea on board merchant ships, on deck or in the engine room. The course is completed with eight months advanced training at Great Neck, Long Island, when the cadets are graduated as licensed officers of the merchant marine and ensigns in the United States Naval Reserve.

Applicants must be between 18 and 23 years of age, and must pass the same physical requirements as demanded by the Navy.

A Seaman Publisher

At this time, when the war shipping and shipbuilding program demands hundreds of thousands of skilled workers, many of whom must learn their trade from the ground up, and learn it "on the double," the production of a line of specialized trade books on the marine industry is a definite and positive contribution to the war effort. The *Cornell Maritime Press* has published twenty-nine titles during the three years of its existence, and many of them have been accepted as standard texts for shipyard workers and seamen in both Government and private schools.

CORNELL of the Cornell Maritime Press

The smartness with which these books fit into the war program and fill the bill is unique, and the story of how they came to be ready at the moment when they were needed most is the story of the genius and foresight of a former seaman who kept a sharp lookout and knew which way the wind was blowing.

Originally from Tennessee, Mr. Cornell has been in turn a sailor in the U. S. Navy, an electrician, a subway engineer, a shipyard worker, a bookseller and a publisher. With a background of actual experience at sea, Mr. Cornell, in 1930, opened a second-hand book shop in a neighborhood frequented by merchant seamen, and during the years when he was selling books to them, he became acutely aware of the great need for practical, authoritative texts that seamen could use. He saw that before he could sell them the books they wanted, he would have to publish them himself. Cognizant of the changes that were brewing in the whole maritime field, and the threat of war clouds hovering over Europe, Mr. Cornell began work on his first publishing venture, *American Merchant Seaman's Manual,* in 1937. Early that year he ran a full page ad in a seaman's newspaper offering prizes to seamen for the best letters on what they wanted and needed in a seaman's manual. The response was instantaneous and almost overwhelming. Many of the letters were good, and, altogether, they gave Mr. Cornell a clear

OFFICERS and FACULTY

MERCHANT MARINE CADET BASIC SCHOOL AT SAN MATEO POINT, CALIFORNIA

TOP ROW: Lieut. Geo. M. Reitz, U.S.M.S., Instructor, Machine Shop; Lt.-Commander Raymond Eisenberg, U.S.M.S., Executive Officer; Lt.-Commander Ralph M. Sheaf, U.S.M.S., Commanding School; Lieut. Frederick Sundquist, U.S.M.S., Engineering.

SECOND ROW (from top): Lieut. John Kucin, U.S.M.S., Deck Instructor; Lieut. Jg. E. P. Butler, U.S.M.S., Engineering.

THIRD ROW: Lieut. Jg. Robert Walton, U.S.M.S., Deck Instructor—Personnel; Lieut. Jg. John Gillen, Deck Instructor; Lieut. Ernest McDonald, U.S.M.S., District Instructors Office; Lieut. Jg. Donald Haas, U.S.M.S., Engineering Instructor; Lieut. Chas. L. Sauerbier, U.S.N.R., Instructor, Naval Science.

FOURTH ROW: Lieut. Joseph Dimrock, U.S.N.R., Matériel Officer; Lieut. Frank Flanner, U.S.N.R., Engineering Instructor; Lieut. Jg. Raymond Keyes, U.S.M.S., Educational Officer; Lieut. Bos'n Alvin Richards, U.S.M.S., Seamanship; Lieut. Jg. Claude M. Anderson, U.S.M.S., Mathematics Instructor.

E. B. SHREVE
Vice President, General Electric Co.

and accurate picture of the kind of manual that seamen were looking for.

So when the Maritime Commission was ready to undertake its training program for merchant seamen in 1938, Mr. Cornell was ready with the first edition of the *American Merchant Seaman's Manual.* The Maritime Commission adopted this book promptly as the official text for its training program and purchased six thousand copies annually. Today, with the great expansion in the training and shipping program, the book sells twenty thousand copies a year.

The method here developed has been practically adopted as a type for all Cornell publications.

G. E. Publicity Representative

General Electric has recently advanced **J. A. (Jack) Corlett** to the position of Pacific District Publicity Representative.

Stationed in Los Angeles for some twelve years, his headquarters will now be in San Francisco. In his work of collecting, preparing and disseminating information on the application and performance of General Electric apparatus (machinery) lines, his field of operation will now include the states of California, Arizona and most of Nevada. He will be assisted in Southern California and Arizona by **A. X. Schilling** who will headquarter in Los Angeles.

Mr. Corlett graduated from the University of Nebraska in 1923 as an electrical engineer. Since that time, he has filled numerous engineering, sales and publicity posts in General Electric.

G. E. Executive Visits Bay Area

E. O. Shreve, vice president in charge of apparatus sales, General Electric Company, Schenectady, New York, arrived in San Francisco August 3, for a rapid-fire inspection of the greatly expanding steel and shipbuilding industries of San Francisco, the Bay area, and Northern California.

Mr. Shreve is no stranger on the Pacific Coast, as he spent approximately 20 years in San Francisco as a salesman, and then manager of that General Electric office.

He was awarded the Marston Medal by the Iowa State College Alumni in 1938 for outstanding achievement in engineering, and has just finished a term as president of the National Electrical Manufacturers Association.

J. A. CORLETT
Pacific District publicity representative, General Electric Co.

G. E. War Program Chief

J. W. Belanger, assistant manager, Federal and Marine Department, General Electric Company, Schenectady, N. Y., spent the week beginning August 10 in San Francisco for an inspection of the shipbuilding industry in the Bay area and Northern California, and for conferences with executives of leading shipyards on various production problems of this vital war industry.

Mr. Belanger was in Southern California for similar conferences immediately following his stay in San Francisco. This is his first visit to the Pacific Coast.

In his capacity as assistant manager of the Federal and Marine Department of G. E., Mr. Belanger is a key man in the company's huge war program. Through his office pass vast Navy, Maritime Commission and Army activities, and he is widely known in Eastern shipping circles as an expert on all phases of shipbuilding.

Recruiting Wins Medal

In recognition of his accomplishments, R. M. Dorman, superintendent of recruiting and training for the Marin Shipbuilding Division of W. A. Bechtel, has been awarded the Medal of Achievement by the War Production Board. The honor is in appreciation of Mr. Dorman's work in recruiting shipyard workers for his plant.

Mr. Dorman's task is to supply eventually 15,000 workers for Marinship and to train those of them who are unskilled as shipyard workers.

Before joining Marinship, Mr. Dorman was deputy director of the California Department of Employment for five years.

WSA Seaman Insurance

Sailors Union of the Pacific headquarters in San Francisco were expecting to hear that the Senate Commerce Committee shortly is expected to approve a bill authorizing payment of insurance and social security benefits to seamen employed by the War Shipping Administration.

The bill, introduced by **Senator Josiah Bailey,** was sponsored by the War Shipping Administration.

Harry Lundberg, secretary-treasurer of the SUP, attended the hearings on the bill.

Marinship Official Changes

Bruce Vernon, who has been in charge of the design and engineering of the Marinship plant at Sausalito as project manager of Bechtel-McCone-Parsons Corporation, has transferred to the Marin Shipbuilding Division of the W. A. Bechtel Co. to serve as assistant to General Manager **W. E. Waste.**

Vernon's activities will include cost control work and development of all statistical and progress information.

W. R. Ayers, progress engineer, and his staff have been transferred to Mr. Vernon's department.

Paranite Opens California Offices

Paranite Wire and Cable Corporation of Jonesboro, Indiana, a division of Essex Wire Corporation of Detroit, Michigan, have opened offices in Los Angeles and San Francisco, with field service engineers, for the express purpose of facilitating all types of welding cables and portable cords for the shipbuilding industry on the Pacific Coast.

The Los Angeles headquarters are located at 816 West Fifth Street, and the San Francisco office is located at 55 New Montgomery Street.

Westinghouse Promotions

A. E. Hitchner, formerly Los Angeles manager for Westinghouse, and more recently commercial assistant to the Pacific Coast District manager with headquarters at Los Angeles, has been appointed to an executive post at East Pittsburgh, Pa., the company's headquarters.

Mr. Hitchner has been named assistant to **F. H. Stohr,** Industry Sales Manager. Announcement of the appointment was made in August by **B. W. Clark,** of Pittsburgh, Pa., vice president in charge of sales for the Westinghouse Electric and Manufacturing Co., who was in San Francisco on a business trip. Mr. Hitchner reported for duty at East Pittsburgh on August 15.

HUGO E. BECKER
Supervises maintenance sales for Westinghouse Pacific District.

Mr. Hitchner's long connection with industrial activities of the company qualify him eminently for his new position, Mr. Clark said. He joined Westinghouse in 1909 at Philadelphia, Pa., as an industrial salesman. In 1919, he was appointed as assistant to the manager of the Industrial Department at East Pittsburgh, and seven years later was transferred to the Los Angeles office as manager. He held that post until mid-March, 1941, when he was named commercial assistant to Chas. A. Dostal, Pacific Coast District manager. A native of New Jersey, Mr. Hitchner is an electrical engineering graduate of Rutgers College.

WALTER H. THOMPSON
Directs Westinghouse lamp activities in Pacific District

Walter H. Thompson, formerly assistant manager for the Central District of the Westinghouse Lamp Division at Pittsburgh, Pa., has been named district manager for the division's Pacific Coast District with headquarters in San Francisco.

Announcement of the appointment, effective August 1, was received from B. H. Sullivan, general sales manager, of Bloomfield, N. J. Mr. Thompson will succeed Ray W. Murphy, who goes to Bloomfield as a member of Mr. Sullivan's staff.

In his new post, Mr. Thompson will have charge of all activities of the Lamp Division, Westinghouse Electric & Manufacturing Co., in Oregon, Washington, California, Arizona, Utah, Nevada, Idaho, Western Wyoming, Western Montana, Alaska and the Hawaiian Islands.

CHIEF COLUMBUS WATERHOUSE LOWITH
with his bride at breakfast.

Hugo E. Becker, engineering graduate of Stanford University and a Westinghouse sales engineer on the Pacific Coast since 1925, was recently appointed supervisor of the newly created Maintenance Sales Department for the company's Pacific Coast District. Announcement of the appointment was made here recently by Chas. A. Dostal, Pacific Coast District manager.

In his new post, Mr. Becker will coordinate the work of three major maintenance divisions of the company—renewal parts, field engineering and repair plants—to minimize breakdown outages and insure uninterrupted production in industrial plants, most of which are engaged in production for war. In addition to industrial plants, he will coordinate maintenance of existing Westinghouse equipment in the marine industry, and electric utilities, and on transportation systems—all of them vital to the war effort.

Mr. Becker's territory comprises the Western United States from the Rocky Mountains to the Pacific Coast and from the Canadian border to Mexico. He will make his headquarters in San Francisco.

Popular Chief Claims Bride

Columbus "Clum" Waterhouse Lowith, popular pre-war chief engineer for the Matson Navigation Company, now lieutenant in the USNR, claimed as his bride at a Pacific port pretty **Ethel Schutzer,** San Francisco society girl, daughter of Mrs. J. O. Schutzer.

Five hours after the ceremony, the groom sailed under sealed orders. The bride is a sister of **Mrs. Ralph Sheaf,** wife of **Lieutenant-Commander Sheaf,** in charge of the Maritime Training School just opened at San Mateo Point, and of **Mrs. Martha Pedersen,** widow of the late **Captain Alfred "Stormy" Pedersen,** skipper of Templeton Crocker's yacht *Zaca* and for years with the Admiral Line.

For The Duration

Ray Demoro, one of the best-known steamship executives on the Pacific Coast, has joined the British Ministry of War Transport in the San Francisco headquarters. Until his appointment, Mr. Demoro had been associated with Erik Krag of the Interocean Steamship Corporation's interests.

Friends have been congratulating **H. A. Snook,** formerly district manager in Seattle for the American-Hawaiian Steamship Company, following his recent appointment as Seattle port representative of the Recruitment and Manning Organization. Mr. Snook was named to his post by **Guy Needham,** Pacific Coast director.

Called to Washington to assume a post in the Wartime Insurance Division of the War Shipping Administration, **L. J. Haefner,** marine secretary of the Fireman's Fund Insurance Company, was tendered a farewell dinner by his associates. One of the best-known men in his field in Pacific Coast shipping circles, Mr. Haefner will be on leave from his firm. He is known nationally as well as on the West Coast for his knowledge of marine matters.

Fred Ducato, formerly with the freight department of Grace Line as assistant freight traffic manager in San Francisco, has entered training for a lieutenant junior rating in the Navy. He left here September 9 for Newport, Rhode Island, to take up duties in the Volunteer Deck Service.

Harry Hornung, one of San Francisco's respected and popular shipping executives, now Major Hornung, USA, writes friends from a South Pacific port that everything is fine in his area. He is handling one of the most important overseas marine posts for the Government.

LEO E. ARCHER
Now in charge of new Los Angeles office of Moore-McCormack Lines.

When **George A. Pope, Jr.,** president of Pope & Talbot Lumber Company, parent of the McCormick Steamship Line, entered the service of the Army, he was the 108th member of the firm afloat and ashore to be inducted, **Charles L. Wheeler,** vice president and general manager of McCormick Steamship Line, announced.

W. H. "Bill" Maybaum, Pacific Coast passenger traffic manager of the Panama-Pacific Line, has left and is now a lieutenant in the U. S. Navy. This is his "second hitch," as he served in France with the Army in World War I. He will be located in San Francisco.

LIEUT. W. H. MAYBAUM, U.S.N.

John T. Franke, general baggage agent of the United States Lines, reported for active duty as a first lieutenant with the United States Army Transport Service on August 22. Lieutenant Franke joined the company on April 3, 1919, and is known to thousands of ocean travelers.

He served with the Second Field Artillery of the National Guard at the Mexican border during 1916 and 1917. When the United States entered the World War, he was transferred to the training camp at Spartenburg, S. C. From May, 1918, to the end of the war, Lieutenant Franke served overseas as first sergeant with the 105th Field Artillery.

He was cited for "conspicuous gallantry in action" and was later awarded the Conspicuous Service Cross and the Decoration of the Service Star. His home is in Wood-Ridge, N. J.

Changes—Promotions—Shifts

The appointment of **R. J. Hearn** as assistant manager of the Boston District Office of the Crocker-Wheeler Electric Manufacturing Company has been announced by **C. F. Poirier,** vice president. An electrical engineering graduate of the University of Notre Dame, Mr. Hearn joined Crocker-Wheeler 2½ years ago as a field engineer, specializing in the application of motors for machine tool drives. He was formerly employed by Allis Chalmers Mfg. Co. and sales and service engineer in Milwaukee, Cleveland and Boston.

Friends of **Stanley G. King,** who was former Los Angeles traffic representative for the American President Lines, will be pleased to learn that he has been elevated to the post of general traffic manager for the American Air Lines in Mexico.

Behind Mr. King is a rich experience of 22 years in passenger traffic. He was at one time associated with the United Fruit. During the last war, Mr. King served in the Transportation Division of the United States Navy.

In his new position, Mr. King will be located in Mexico where he will direct all airline traffic for the Republic.

Ernst Holzborn, director of the Division of Coastwise and Intercoastal Transport for the Office of Defense Transportation, has been promoted to assistant director in charge of all waterway transportation.

Before the war, Mr. Holzborn was district manager for Swayne & Hoyt in the Gulf district with headquarters in New Orleans.

The many friends of **Captain Giles Stedman** and the thousands of travelers who voyaged on his vessels, will be pleased to hear that he has been elevated to the rank of captain in the Naval Reserve from lieutenant-commander.

Pacific Coast friends recall the visits of Captain Stedman when he brought the liner *Washington* out, and also as master of the *America,* largest and finest leviathan ever constructed in United States yards.

Robert Dollar, son of the late J. Harold Dollar, named for his famed grandfather, Captain Robert Dollar, has been promoted to a captaincy in the Army from the rank of lieutenant. He is attached to the transport service at Fort Mason.

Lieutenant Robert Wagener, who was formerly manager in Oakland for the Interocean Steamship Corporation, is en route overseas for the Army Transport Service.

Moore-McCormack Line has opened offices in Portland in the Wilcox Building in charge of **L. F. Klein,** formerly manager of the Philadelphia offices.

Charles Lelbach, Jr., resigned his berth as assistant traffic manager of the South American Service and South Sea Services of the General Steamship Corporation.

W. G. Tate, veteran secretary of the Pacific Coast Northwest offices of the Pacific Westbound Conference, has been placed in charge of the Seattle cargo clearance office of the War Shipping Administration.

CAPTAIN GILES STEADMAN
U.S.N.R.

Temporary offices for the **Moore-McCormack Steamship Company** in Southern California have been established at Pier A, Long Beach.

Leo E. Archer is in charge of this office.

Friends of **Henry Fortman,** president of the Alaska Packers' Association, were saddened to learn that the popular and venerable head of this organization had to undergo amputation of his leg due to an infection.

At press time, Mr. Fortman was reported well on the way to recovery. Few men in Pacific Coast shipping and fishing activities hold the high esteem that is enjoyed by Mr. Fortman among his business and social acquaintances.

L. J. HAEFNER
Marine Secretary, Fireman's Fund, has joined WSA

George Flood, head of the pioneer shipping firm that bears his name, is convalescing from critical injuries suffered when struck by a motorcycle. He is confined to his Sausalito home.

Dr. Henry F. Grady, head of the American President Lines, is back at his desk, for the present at least, following another mission to Washington in connection with the war effort.

"Dick" Hughes To Service

To his many customers and friends in the northern part of California, from now on it will be **Richard Hughes, Jr.,** Chief Specialist, United States Navy. For on August 10 "Dick," as he is popularly known, left San Francisco for a special training course in recruiting work to be given in San Diego.

Hughes was one of eight men selected from several thousand applicants to receive a Chief Specialists rating for this special recruiting duty. After completing this course of intensive training, Hughes expects to be stationed in the northern part of the state. Dick's selection for this important job with Uncle Sam was made on the basis of his sales experience and his exceptional personality (ever see Dick when he wasn't smiling?).

Hughes will be on leave of absence from the San Francisco headquarters of Tubbs Cordage Company, with which firm he has been connected for 16 years, during the last two years in charge of Northern California sales.

Good luck, Dick!

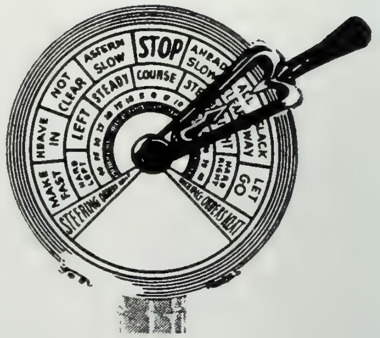
Crossman To Hueneme

Lieutenant Malcolm E. Crossman, who served for two years as District Instructor for the U. S. Maritime Commission at Treasure Island, is now performing the same duties at the War Service Administration's station at Port Hueneme.

Lieutenant Crossman was succeeded in San Francisco by **Lieutenant Commander A. O. Brady,** USNR.

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

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OCEAN PHENOMENA

CURRENTS, WINDS, FOG AND RAIN

QUESTION

What is the cause of ocean currents?

ANSWER

The principal cause of ocean currents is the action of the sun's rays upon the surface of the water in the tropics.

This action causes the ocean waters to expand and overflow towards the poles. At the same time the extremely low temperature of the waters of the polar regions causes an increased density of the surface waters in those regions, causing them to sink and flow towards the Equator.

It is obvious that there is now a comparatively constant flow of warm water from the Equator to the poles, and also a cold flow from the poles to the Equator.

At the Equator the cold water gradually rises to the surface to be again heated by the sun. The heating of the water in the tropics and the chilling of the water in the polar regions is continual, therefore the overflow of the water in the tropics and the underflow from the poles are constant.

The prevailing winds have much influence upon the strength and the direction of ocean currents. The currents of the ocean may be divided into two general classes:

1. Drift, or surface currents.
2. Stream currents.

QUESTION

What is a surface current?

ANSWER

Surface currents are produced mainly by the wind; they move along the surface of the water in a direction approximately parallel to the wind. It is obvious that these currents are shallow and of low velocity. Our knowledge of the surface currents of the oceans is to a great extent dependent upon ship's observations.

QUESTION

How are these observations made?

ANSWER

As a general rule, the currents are recorded once in each 24 hours. The difference between the vessel's actual position by astronomical observation and as determined by dead reckoning is considered to be caused by the set of the current. This is, of course, subject to many slight errors, such as:

1. Incorrectly determined course and distance by dead reckoning.
2. Errors in astronomical determination of the vessel's true position.

However, if sufficient reports from different vessels in the same vicinity are available, then the mean of the observations will give a fairly good estimate of the currents prevailing in that location.

QUESTION

What are stream currents?

ANSWER

Stream currents are produced when a drift current is deflected by meeting an obstacle, such as a line of coast, and it flows in a direction imparted to it by the obstacle.

A stream current has depth and in most cases is more powerful than a drift current. These currents are sometimes referred to as oceanic rivers, such as the Gulf Stream.

QUESTION

What are the principal stream currents?

ANSWER

(1) The Gulf Stream

This current commences in the Gulf of Mexico and appears to be generated by the Guiana Current coming up the north coast of South America.

The Gulf Stream flows through the Straits of Florida, where it is about 45 miles wide. Its greatest velocity is in July, August and September. Upon entering the Straits of Florida, it flows at about $2\frac{1}{2}$ knots and increases to about 4½ knots at the Strait's narrowest part. It maintains a velocity of about 3 knots to Latitude 35 North, and then gradually decreases, merging with the northeast surface drift across the North Atlantic Ocean.

Its width off Cape Hatteras is about 110 miles, and between Halifax, N. S., and Bermuda, about 225 miles.

The Gulf Stream is a warm-water current, its temperature ranging from about 83° F. in the Gulf of Mexico to about 58° to 60° F. off Newfoundland. The color of the water is a deep blue and the edge of the stream is clearly defined by ripples in the lower latitudes and by evaporation and color in the higher latitudes.

The Gulf Stream washes the coasts of Western Europe, British Isles and Norway and finally loses itself in the Arctic Ocean.

(2) The Labrador Current

This is a cold current flowing down from the Arctic Ocean, setting south through Smith Sound, Baffin Bay and Davis Strait. Off Cape Farewell it joins with the Greenland current coming down the east cost of Greenland, both currents then flowing along the coast of Labrador. It then curves to the south and part of the current flows through the Straits of Belle Isle. Another part flows south along the east coast of Newfoundland and meets the Arctic Current.

(3) The Arctic Current of the Atlantic

The Arctic Current is really a continuation of the Labrador Current and flows down the south coast of Newfoundland and along the east coast of North America, inside the Gulf Stream. It finally enters the Caribbean Sea as an undercurrent.

(4) North Equatorial Current

This is a vast stream caused by the northeast trade winds. This current crosses the entire Atlantic Ocean from east to west between the parallels of 10 degrees and 20 degrees North. The average velocity of this current is about 35 miles per day, although at times it is as much as 60 miles per day.

The North Equatorial Counter Current is an offshoot of the Equatorial Current. Between the months of July and November, the northern portion of the Equatorial recurves to the eastward and reflows to the coast of Africa, losing itself in the vicinity of the Gulf of Guinea.

The South Equatorial Current is caused by the action of the southeast trade winds. It is usually found to the north of the Equator and flowing strongly to the westward. It flows along the coast of Columbia in a West Northwest direction and to some extent, joins the North Equatorial Current in the vicinity of Tobago.

Another branch of the South Equatorial Current is known as the Brazil Current. This current sweeps to the southward and extends as far south as the Rio de la Plata where it again recurves to the eastward and becomes the South Atlantic Connecting Current.

(5) The South African Current is also a vast stream flowing to the northward along the west coast of South Africa from the Cape of Good Hope towards the Equator. It connects with the Equatorial Current. The velocity of the current from the Cape of Good Hope to the River Congo is about one mile per hour. Off the mouth of the Congo, it is met by the impetuous stream of that river which flows at the rate of two to four knots in a northwesterly direction until it unites with the Equatorial Current, some 2 to 3 degrees south of the Equator.

The stream of the Congo River may be felt 300 miles off the river's mouth; it will be recognized by the yellowish olive green color of the water caused by the clay deposit given off by the waters of the Congo.

(6) The Cape Horn Current

This is a cold current coming up from the Antarctic regions and flows to the eastward. After passing Cape Horn, it curves to the northeast and passes the Falkland Islands; its velocity is about one knot.

At about Latitude 40 degrees South, it joins the South Atlantic Connecting Current flowing to the eastward.

(7) The Japan Current

The Northern Equatorial Current of the Pacific, which sets to the west across the Pacific Ocean, upon reaching the eastern shores of the Philippine Islands, is deflected to the northward. This is the beginning of the great oceanic warm current known as the Japan Current or "Kuro-Shiwo." The velocity and limits of this current are greatly influenced by the monsoons of the China Sea and the prevailing winds of the Yellow and Japan seas.

Eastward of the Philippine Islands, this current flows in a northwesterly direction, then turns to northeast off the coast of Japan and diffuses itself in the North Pacific in about Latitude 40 North and Longitude 155 East. A branch of the Japan Current, known as the North Pacific Drift Current, continues to cross the Pacific in a general easterly direction and strikes the coast of North America off Vancouver Island.

QUESTION

Why does the Labrador Current have considerable influence on ice conditions?

ANSWER

Because the velocity of the current varies considerably, from almost stationary to as much as 36 miles per day; then the volume of the current is greatly increased during the spring and summer by the melting of the ice and snow of the Arctic.

QUESTION

What causes the trade winds?

ANSWER

The trade winds are caused by the air being impelled from the areas of high pressure towards the low-pressure belt at the Equator. The rotation of the earth deflects these air currents to the right hand in the Northern Hemisphere and to the left hand in the Southern Hemisphere, thereby producing the northeast and southeast trades, respectively.

QUESTION

How is fog created?

ANSWER

Usually by a warm wind passing over relatively colder water, the moisture of the air is condensed into visible vapor. Sometimes a cold wind passing over water having a higher temperature chills the relatively warmer vapor rising from the surface of the sea, and forms fog.

Sea fog may be caused by the interlacing of hot and cold ocean currents.

QUESTION

How is coastal fog produced?

ANSWER

By a supply of cold air flowing into a locality after a period of warm

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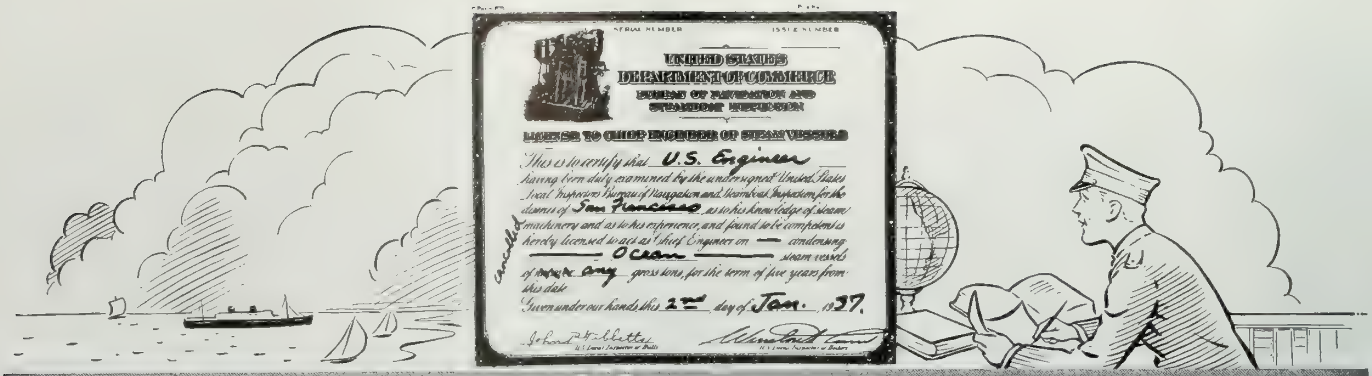

SERIAL NUMBER ISSUE NUMBER

UNITED STATES
DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION AND
STEAMBOAT INSPECTION

LICENSE TO CHIEF ENGINEER OF STEAM VESSELS

This is to certify that U.S. Engineer having been duly examined by the undersigned United States Local Inspectors Bureau of Navigation and Steamboat Inspection for the district of San Francisco as to his knowledge of steam machinery and as to his experience, and found to be competent is hereby licensed to act as Chief Engineer on — condensing — Ocean — steam vessels of any gross tons, for the term of five years from this date

Given under our hands this 2nd day of Jan. 1937.

Cancelled

U.S. Local Inspector of Hulls U.S. Local Inspector of Boilers

Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

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QUESTIONS FROM THE SHIPS

Dear "The Chief":

Will you kindly answer these questions, please?

Exhaust valve of a diesel engine opens 45 degrees before *lower dead* center, and closes 15 degrees after of the *upper dead* center. If the engine flywheel is 12 feet in diameter, explain correct locations of the timing of the opening and closing of the exhaust valve for No. 2 cylinder on the flywheel and state what symbols should be used.

Determine the indicated horsepower of a single-cylinder 4-cycle diesel engine if the piston diameter is 6 inches, the length of stroke 9 inches, mean effective press 84 pounds psi, and the engine runs at 1000 revolutions per minute.

Also two methods of clearance of a cylinder.

Most respectfully,

W. B.

ANSWER

Dear W. B.:

From your questions, we assume that you are taking an initial, or raise in grade, examination for some grade as a marine engineer. We wish you the best of luck, and here give the answers to your questions as follows:

The problem of *marking* the flywheel of an engine to show valve position involves, first, the location of a tram, pointer, or reference mark on the frame of the engine where the wheel is accessible. Then marks on the wheel can be located to indicate centers and valve positions. Marking the flywheel when positions are specified in degrees involves changing degrees of arc to circumference distance at a given diameter.

Thus, a 12-foot diameter flywheel would be 12 × 12 × 3.1416 = 452.3 + inches in circumference.

And each degree of angle would be 452.3 divided by 360 = 1.258 inches.

15 degrees would be 15 × 1.258 = 18.87 inches.

45 degrees would be 3 × 18.87 = 56.61 inches.

The procedure would be to put engine on top dead center at the frame reference mark or tram, chisel a mark on the wheel, and stamp it T C. Put engine on bottom center and mark the wheel B C.

Then, for the closing position of exhaust valve 15 degrees after top center, measure off 18.87 inches; after or from the top center mark in direction of rotation, i.e., move engine in normal rotation until reference mark on frame is 18.87 inches on flywheel from the mark T C. At this point, chisel a mark and stamp it No. 2 EX CLO. This could be briefed to 2 E C.

For the opening position, 45 degrees before bottom center, locate the mark on the wheel 56.61 inches on the wheel rim ahead of B C, i.e., rotate the engine backwards from B C to measure this distance. Mark it No. 2 EX OP, or briefly 2 E O.

The indicated hp of the diesel engine is figured much like the steam engine, being careful to account for the number of power strokes per minute.

Four cycle means four strokes or two revolutions per power stroke. Thus, 1000 revolutions per minute gives 500 power impulses per minute per cylinder.

Indicated hp is P. L. A. N. divided by 33,000, where P is indicated MEP, L is length in feet of stroke, A is area of piston in square inches, and N is the number of power impulses per minute.

Area is diameter × .7854.

Thus, the hp in this problem would be as follows:

$$HP = \frac{84 \times \frac{9}{12} \times 6 \times .7854 \times 500}{33{,}000}$$

Let the reader make these calculations.

Engine clearance is measured by several methods, depending on the engine arrangement and condition of being dismantled.

One method is to open the connecting rod crank bearing and lift piston

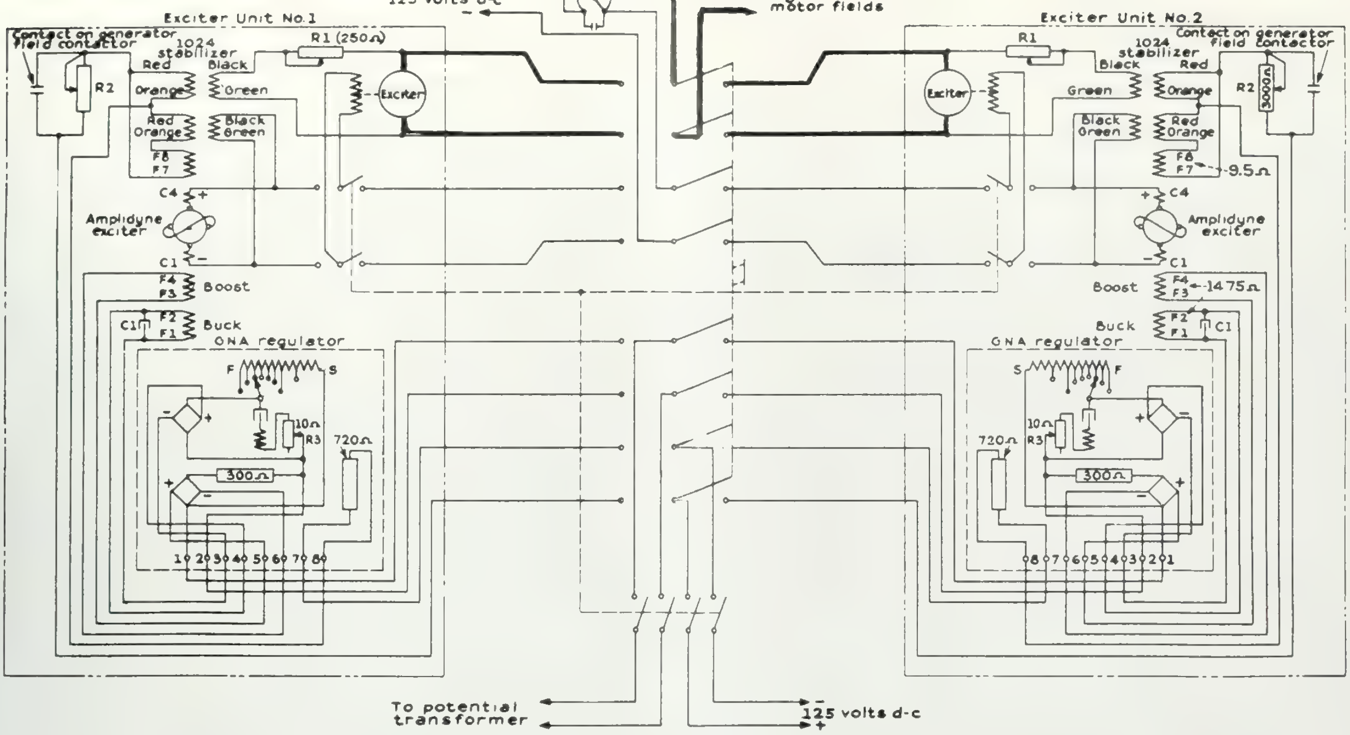


DIAGRAM OF CONNECTIONS FOR CONTROL OF GENERATOR VOLTAGE IN ELECTRIC PROPULSION

as far as it will go, measuring the amount of lift above the top dead center mark on some part accessible.

Another is to place a bar of soap on top of piston through a valve opening. Turn engine over top center, remove soap, and measure thickness to which it has been compressed.

ELECTRIC PROPULSION FOR SHIPS

VI—GENERATOR VOLTAGE CONTROL

On many early electric propulsion equipments, the control of generator voltage was left to the alertness and skill of the engineer on watch. At a steady speed and load, the voltage has little tendency to swing or change, but there are conditions under which the voltage will change quite rapidly, and furthermore it is always desirable to run at as low a voltage as will adequately transmit the power.

A heavy sea may cause the propeller to lift partly out of the water, dropping load, with the consequent change in current and its effect on voltage. The turbine governor holds speed to the adjusted valve. The sudden increase in load when propeller dips into the water may cause motor to drop out of step unless voltage is well up above a critical minimum.

Also in maneuvering, the change in speed changes voltage. It will be recalled in an earlier discussion that the voltage generated is proportional in value to the strength of the field and the speed or frequency.

Another point to recall is that the motor field must be maintained at the same proportion to the generator field at all times, otherwise the power factor swings too far from 1, or unity, towards leading if motor field is too strong, and toward lag if too weak. Power factors other than unity indicate the flow of parasite or wattless currents, causing loss from excess current as well as loss from excess field on one machine.

An important factor is the maximum torque available in the motor and generator. If this is too low, they pull out of step, or out of synchronism, and the motor slows to a stall.

This maximum torque is proportional to the field strength of the machines. Thus, to increase maximum available torque, we raise field strength, thereby raising voltage on ac propulsion bus bar. But, if we have too much maximum torque available, we waste power in excessive field and excitation kilowatts. We may, therefore, reduce voltage in fair weather (long, steady run), but raise it in rough weather or maneuvering to be ready for an unexpected demand for torque or shock load. This adjustment would be made by setting the automatic voltage regulator to hold the desired value.

However, we would not want the voltage to remain at a normal value when speed is reduced, as this would require an increase in field and exciter kilowatts, the lower the speed the greater the excitation needed to maintain volts. We would rather have the voltage reduce in proportion to the speed. This would leave the field excitation constant. This also leaves the maximum torque constant or normal. This would seem to leave nothing for an automatic voltage regulator to do. Also, the ordinary regulator would try to hold voltage constant regardless of speed.

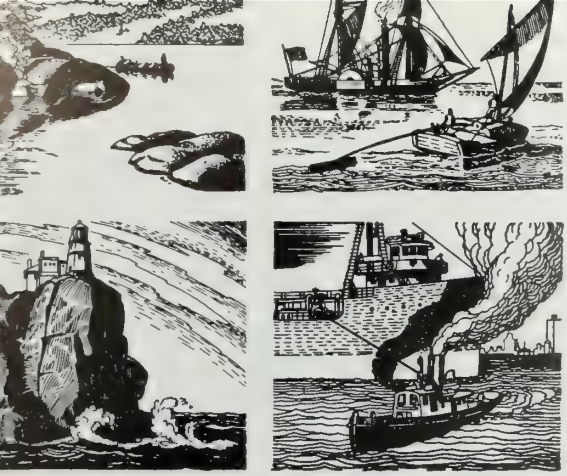
There is a very excellent reason for the right kind of voltage regulator. It should properly drop the voltage so that it falls more than the speed. Suppose we consider 90 rpm and 2400 volts normal. If voltage drop is proportional to speed drop, 45 rpm would give 1200 volts, and 15 rpm would give 400 volts. This would be at constant field strength and normal maximum torque available. But we do not need nearly normal maximum torque at 45 or 15 rpm. The required torque decreases very rapidly as we decrease the speed. At $\frac{1}{2}$ speed, we need about $\frac{1}{4}$ torque, and at $\frac{1}{6}$ speed we need 1/36 of the normal torque. The torque requirements of a propeller change with the square of the speed.

By using a special regulator, we can drop the voltage and torque to below the "proportional to speed" value so that at 90 rpm we have normal 2400

(Page 95, please)

Some New Books

FOR THE SHIPMINDED



Drawings by John O'Hara Cosgrave, II

Illustrations from
"The Long Ships Passing: The Story of the Great Lakes"
By Walter Havighurst
(Macmillan)

Modern Ship Stowage, by Joseph Leeming; 775 pages, 5$\frac{1}{2}$" x 9", with numerous illustrations; bound in khaki buckram, with black stampings; published by the U. S. Department of Commerce; for sale by the Superintendent of Documents, Government Printing Office, Washington, D. C. Price $1.50.

Shortage of ocean-going shipping space intensifies the need for authentic data on stowage factors which will assist maximum use of available facilities.

This manual describes modern and efficient methods of receiving and handling cargo at the ocean terminal, and follows every movement of the cargo until it is stowed in the vessel's hold. Emphasis is laid on methods that have been found effective in speeding up the discharge of inward cargo and the loading of outbound goods in order to reduce to the minimum the ship's stay in port.

One section of the book lists stowage factors pertaining to weight and measurement of over 10,000 commodities carried in ocean trade, and shows the number of cubic feet occupied by one ton of the commodity, as packed for shipment. Other sections describe shipping, packing, and stowage terms, weights and measures used in world-wide ocean shipping, and cite the principal United States laws governing the stowage and carriage of sea-borne cargoes.

Facilities to assist shippers in keeping informed of new regulations which may have an effect upon the procedures set forth in the manual have been established by the Bureau of Foreign and Domestic Commerce as a supplementary service.

The Long Ships Passing, by Walter Havighurst; 300 pages, 5$\frac{1}{2}$" x 8$\frac{1}{2}$"; bound in gray buckram, with black stampings; illustrated with pen and ink drawings by John O'Hara Cosgrave II; published by McMillan Company, New York. Price $3.00.

Walter Havighurst, associate professor of English at Miami University, Oxford, Ohio, says he is prouder of his A.B. (able seaman) papers than any of his numerous college degrees. He learned the trade on the Great Lakes, being a native of Appleton, Wisconsin, and has served at sea on both oceans. He is the author of the *Upper Mississippi* and of several novels based on life in the Great Lakes country.

The extensive research that preceded the writing of these books and an intimate first-hand knowledge of the scene are reflected in the pages of *The Long Ships Passing.*

This tale tells in a very delightful way and in very readable English prose the story of the development of shipping on the Great Lakes in a series of chapters, each centered on dramatic episodes from the first Jesuit explorers of 1634 who opened up these *Sweet Water Seas* down to the days of the *Big Storm in 1913.* The story is crowded with the great events of America in the making.

We can heartily recommend this book as great reading for these times.

Marine Diesel Handbook, by Louis R. Ford, M.A.; 900 pages, 6" x 9"; numerous illustrations and drawings bound in blue buckram, with gold stampings, published by Diesel Publications, Inc., New York. Price $4.00.

Louis R. Ford, for many years editor of *Motorship and Diesel Boating,* is a recognized American authority on the diesel engine and its application to marine propulsion. In this, his latest book, he has presented a very comprehensive treatment not only of the marine diesel engine but of the entire power plant of the modern motorship.

Modern methods of applying diesel power to propulsion of ships are fully explained, illustrated and discussed. Notable are the chapters on such important topics as "Supercharging," "Factors Affecting Overall Economy," "Waste Heat Recovery," and "Noise Suppression."

This book is well arranged, adequately indexed, and covers its subject thoroughly. It should be on the bookshelf of every designing and every operating marine engineer, and it should be supplementary reading for every mechanical engineering student.

Plant Protection, by E. H. Schurman; 146 pages, 5" x 7$\frac{1}{2}$"; well illustrated and reproducing many important office and control forms; bound in green buckram, with black stampings; published by Cornell Maritime Press, New York. Price $2.00.

The author, who is now chief of protection for the Glen L. Martin aircraft plants, after many years of experience in U. S. Secret Service, writes with authority. This manual is designed for the guidance of men who are suddenly called upon to immediately institute adequate security measures against spies and saboteurs.

It sets forth organization structures and operation plans suitable for a force that can be promptly and widely extended, or by simple modification reduced to that necessary in a very small plant.

Adequate and detailed coverage is given to: routine procedures; protection equipment; methods of application; self-control and self-defense; fire hazards; detecting espionage, and defeating sabotage.

All protection officers in shipyards and marine industrial plants should study this manual.

Handbook of Ship Calculations, Construction and Operation, by Charles H. Hughes; 560 pages, 4$\frac{1}{2}$" x 7"; bound in semi-flexible red buckram, with gold stampings; numerous diagrams, tables and illustrations; published by McGraw-Hill, New York. Price $6.00.

This is a third edition of a standard reference book on the subject. It is so up to the minute as to include all particulars of the Maritime Commission ships now building in American shipyards.

Mr. Hughes is a competent naval architect and marine engineer of ripe experience. The first edition of his handbook came out in 1917, and immediately aroused such demand that a second edition had to be printed in 1918.

The present edition (1942) is greatly improved, and our prediction is that it will sell out very quickly. It contains the solution to practically all the problems that confront the student of ship design, shipbuilding and ship operation. Get your copy promptly. They will soon be sold out.

"Procedure Handbook of Arc Welding Design and Practice," seventh edition; published by The Lincoln Electric Company, Cleveland, Ohio; 1308 pages, 6 x 9 inches, 1810 illustrations, including photos and drawings; cover, semi-flexible simulated leather, gold embossed; price postpaid United States $1.50 per copy, elsewhere $2.00 per copy.

Greatly enlarged, the seventh edition of the *Procedure Handbook*, just published, takes on a new significance this year.

Authors of the book have made every effort to provide as much complete and up-to-date information as possible to help the men in the shops, shipyards, airplane factories, ordnance plants and arsenals produce to the fullest extent.

The book explains more fully than ever before the various methods and techniques used in welding, with a view to speeding up welding design and engineering and to make it easier for the thousands of men in training to learn the essentials of welding in the shortest possible time.

Illustrated more exhaustively and more clearly than ever before is the chapter on "Typical Applications of Arc Welding." Large numbers of these new applications have been developed during the past year in the many fields of war production.

New and significant information is given in the new handbook on such subjects as welding symbols, new allowable stresses, preheating for welding, stress relieving, procedures, speeds and costs, "Fleet-Fillet" technique, general metallurgical characteristics of metals and alloys, weldability of aluminum alloys, tubular construction, appearance and styling of welded design and many others.

Modern Marine Engineers Manual, 1600 pages; numerous drawings, diagrams, tables and half tones; bound in blue buckrum with gold stampings; published by the Cornell Maritime Press, New York. Price $3.50 net.

Alan Asbourn is the editor-in-chief for this volume, which is the work of 18 contributing editors. Most of these men are in the employ of the Maritime Commission, and each of them is an expert in his line. A foreword by J. E. Schmeltzer, Director, Construction Division, U. S. Maritime Commission, states that this book is the "product of a great many hours taken away from pleasure and home duties by a group of marine engineers. . . . The royalties from the book go to the Welfare Society of the U. S. Maritime Commission. It is to be hoped that this manual, prepared under stress, may aid in the training and development of those splendid young men—the shipbuilding and seagoing youth of America."

Every engineer officer on every American steamship, every outfitting mechanic in every American shipyard building steamships, should own a copy of this book. It contains more authentic knowledge than any book we have seen on modern steam engineering as applied in the American merchant marine.

The title of this book should be extended to include the abbreviation Vol. I. Another manual, Vol. II, under this title is now in preparation, and will cover diesel engines and certain other important phases of modern marine engineering.

TODD TRAINING SHIPBUILDING CRAFTS

(Continued from page 67)

authorities, under which an applicant signs up for 8000 hours of teaching and work. A student who graduates from this course has a complete knowledge of all the trades in a shipyard.

At the Erie Basin Dry Docks in Brooklyn the classes are ship fitting, which includes loft work or the laying out of a ship and making the patterns and templates therefor, coppersmithing, sheet metal working, oxy-acetylene burning, welding, chipping and caulking. The men spend half a day in school and half a day at work.

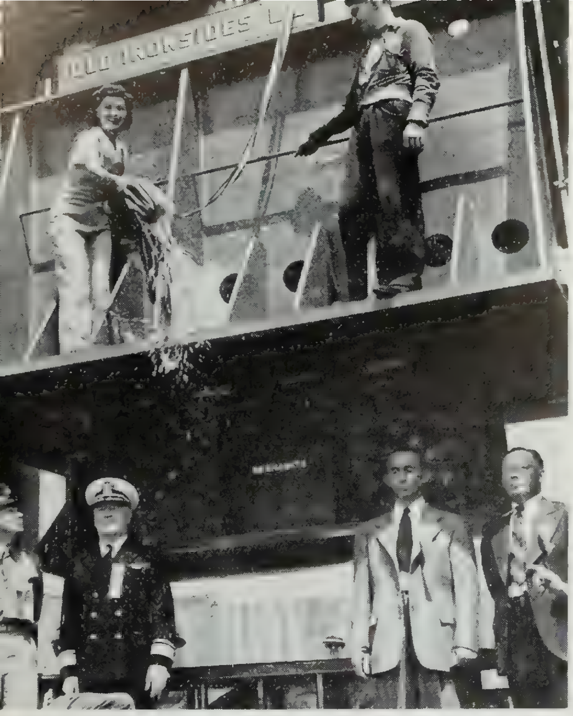
The Hoboken Dry Docks' classes work in a real, honest-to-goodness high school, the public school authorities of weehawken having donated the use of classrooms to the plant. This school is about a five minute walk from the plant and here the students receive their theoretical training in mathematics, ship fitting, inside and outside machine shop work and electrical work.

The training classes at the latter two yards are smaller than in the other plants. This is due to the fact that they were inaugurated later than the others. However, it won't be long before they, too, will be numbering their trainees by the hundreds, for there are 3000 applications on file at Erie Basin and close to 1000 at Hoboken.

In all plants the response of the men has been enthusiastic. There are no vacations in sight, and indeed it is doubtful if the trainees would want a vacation. As one grimy student, fresh from his job, was washing up in the lavatory adjacent to his classroom, he remarked to his side-kick, "Fella, there ain't gonna be any vacation for me while this here is goin' on. I'm doin' a lot right here, and am I glad I got the chance!"

To which John D. Reilly, Todd president, adds his blessing in these words:

"There will be no vacations so long as the men are willing to devote their time to study and thereby aid in the prosecution of this important war effort."



KARL WEBER, justly proud of this achievement, has his big press christened "Old Ironsides"

Largest Drawing

FORMING VENTILATOR COWLS FOR "LIBERTYS"

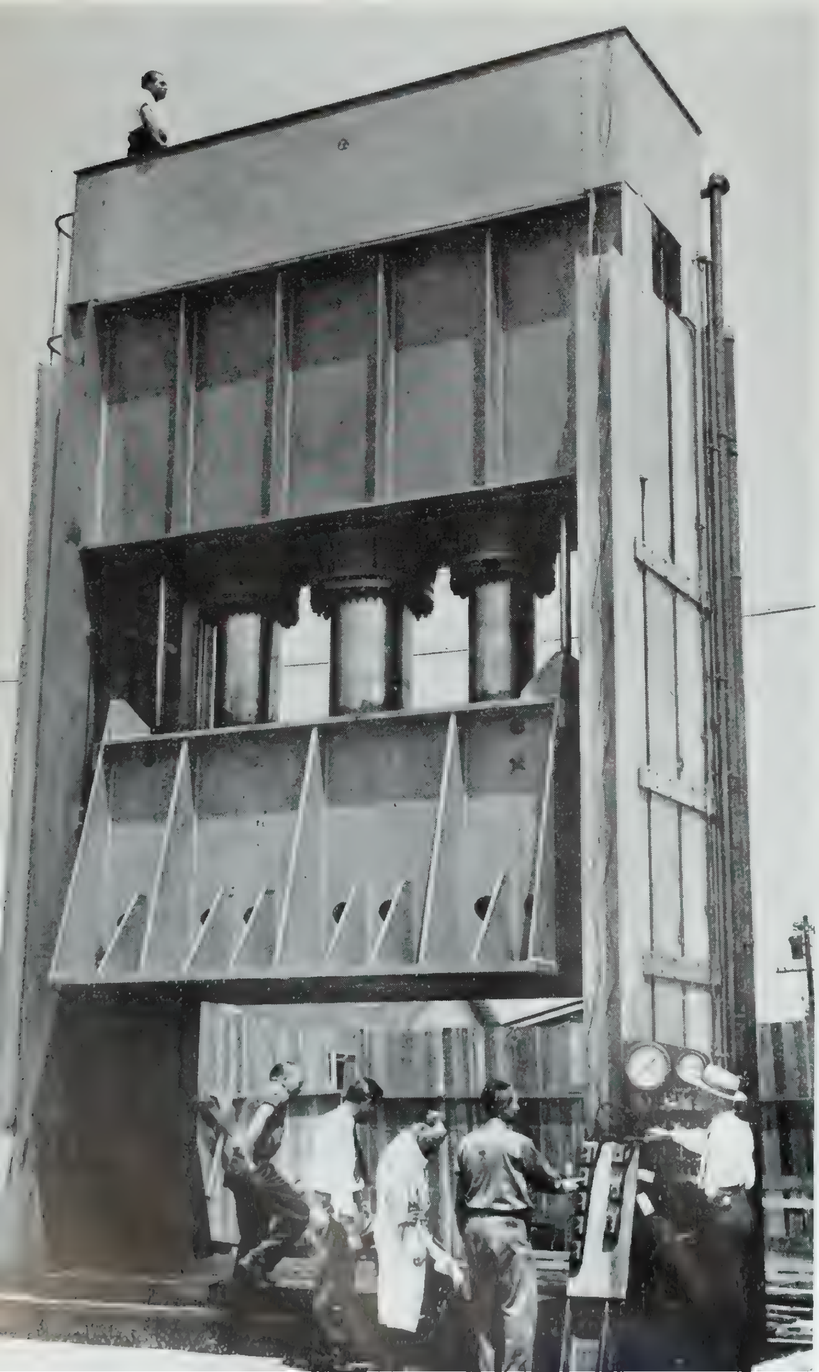
THE PROBLEM OF turning out more than 20,000 large cowl ventilators faster than yards on the three coasts build 10,000-ton Liberty ships in which to transport cargoes of weapons and stores to America's far-flung battlefronts has been solved by the Weber Showcase and Fixture Co., Inc., of Los Angeles, California.

Their answer is the largest drawing (die stamping) press of its kind in the world, built at a cost of $50,000. This mammoth machine, weighing 250 tons, simplifies and accelerates production of ventilators. Two punches and dies, of hand ground cast Meehanite iron, necessary to form both halves of the largest ventilators, weigh 13 tons.

To make possible the deep drawing required for ventilators and other units which may be brought to the press in the future, the designers have allowed for 120 inches of daylight. This adequate space permits workmen to bolt a die of any anticipated size to a movable platen at the top, with the corresponding punch bolted to the lower platen. In operation, the rams which bring the $21\frac{1}{2}$-ton top platen down have a stroke of 84 in. At the end of the stroke, the platen presses against a bed measuring 8 x 12 ft., for a total bed area of 96 square ft. It is this combination of die space, air cushion arrangement, stroke and power that make this a noteworthy machine. Sheet steel may be drawn to a maximum depth of 42 in.

Operating under pressure of 2000 psi, three large hydraulic pistons force the top platen down with a force of 1100 tons. The center cylinder, constructed of cast steel with $3\frac{1}{2}$-in. walls, has an inside diameter of 26 in., and the outer rolled-steel cylinders measure 22 in.

Three hydraulic pumps are employed to move the top platen, two for the downstroke, one for the pullback. All pumps run when the press operates. By means of a bank of push-buttons, the downstroke speed may be varied at will through four stages. Normally, the stroke starts down at the rate of five ft. a minute, diminishing to three ft., then two ft., and finally two inches a minute at the end of the thrust. Pullback carries the die up 10 ft. a minute.

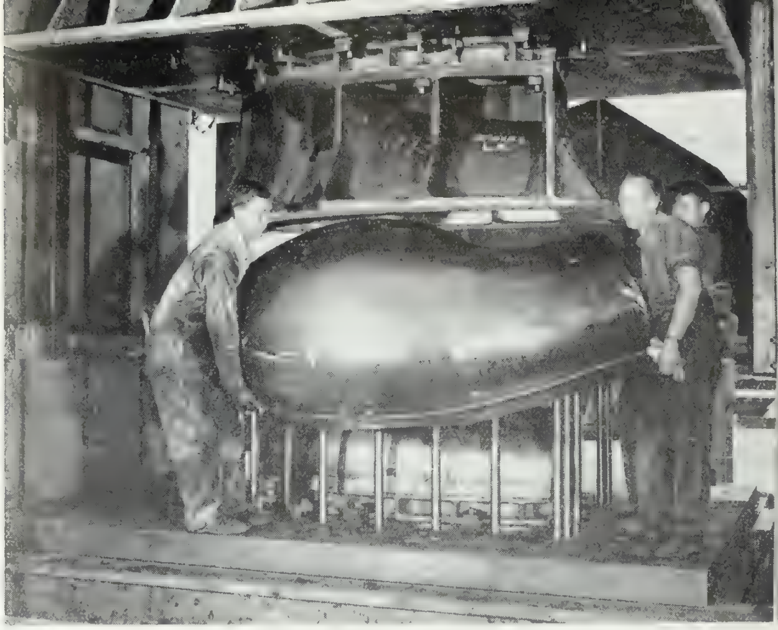


World's Largest

●

THIS 250-TON giant machine, completed recently by the Weber Showcase and Fixture Co., Inc., Los Angeles, is engaged in turning out 20,000 large cowl ventilators for the hundreds of 10,000-ton Liberty ships under construction.

Press



HALF SECTION of ventilator comes out after stamping process. Two punches and dies of hand ground Meehanite iron are employed to turn out these cowls.

The male die rests on a heavy steel bed, and the drawing rings are supported by eight air cushions, each of which may be separately regulated at pressures ranging from zero to 150 pounds. By changing pressures at various points around the perimeter of the bed, stresses and strains may be so governed that the sheet being drawn will not crack and tear.

Weight and design combine to give the structure great strength. The base weighs 25 tons, and the top nine tons. Three hundred and ninety tons of concrete support the press. Six-foot concrete walls surround the pit in which the press rests, helping make the structure earthquake-proof.

Use of the new press has reduced to ten the number of operations required to turn out a ventilator. Of these, five involve welding. The steps follow:

(1) Pressing the sheet (14 gage cold rolled deep drawing steel).

(2) Trimming the flanges.

For this purpose, company engineers developed a new method of cutting. A jig was built which rolls on a steel table against a 6½-in. carbon steel friction saw revolving 9000 rpm. The saw, mounted on a vertical shaft, leaves no grits. The horizontal cut makes a clean trim, requiring 60 to 90 seconds after the ventilator half reaches the jig.

(3) Welding the halves together.

(4) Trimming the bottom and face openings by making two passes against the friction saw.

(5) Roll and weld the collars.

(6) Weld collars to vent.

(7) Weld metal band to sleeve.

(8) Weld round frame on edge of oval.

(9) Sand-blast and galvanize.

(10) Install screens.

Calls for ship cowl ventilators began rolling up like a snowball shortly after December 7. Starting with Pacific Coast shipyards, the demand spread rapidly until yards on the Gulf Coast and along the Atlantic were seeking early delivery of large numbers.

This was no job for timid engineers and production men. The U. S. Maritime Commission needed ventilators in eight shapes, measuring from 4 ft., 4½ in., to 8 ft., 6½ in. in height, and 20 in. to 72 in. in diameter. Plans were submitted to Weber, and in a short time the company submitted its proposals, which were accepted.

For a time, smaller ventilators were pressed, welded, riveted and hammered into shape, a combination of steps requiring too many man hours.

To make the larger ventilators, an effort was made to punch the halves in two pieces (using available presses) and weld the parts together. This procedure proved unsatisfactory. W. A. (Bill) Pruett, research engineer for Weber, proposed that a press be obtained of sufficient capacity that the whole job could be undertaken in a single piece. Mr. Pruett canvassed major manufacturers. None could promise delivery within ten months. Mr. Pruett searched Los Angeles for an engineer with facilities for designing, machining and assembling the various subassemblies, and set to work.

Shortly, having arrived at a design, the job was awarded the Hydraulic Press and Engineering Co., a concern headed by Jack Gantz, who is an experienced engineer on hydraulic mechanism. Plans perfected by these engineers, together with other consultants, called for H-column construction and use of structural steel. "We could not get forgings for four posts," explains Mr. Pruett, "so we took the next best course." During the first week he bought 190 tons of steel, rounding it up anywhere he could find it. He moved his office from the Weber factory into Mr. Gantz' shop, and began a campaign, by telephone and personal calls, for help.

Mr. Gantz started rolling, welding and fabricating cylinders. Emsco Derrick and Equipment Co. fabricated the base, turned the pistons and welded the top member. The L & F Machine Co. fabricated and welded the movable platen and did considerable lathe and planer work. The Los Angeles Shipbuilding and Drydock

(Page 96, please)

SPONSOR'S party have luncheon on base of press, set with dinner table and 8 chairs.

DETAILS of fastening ends of timber truss

THIS MOLD LOFT structure was designed and prefabricated by Teco.

Prefabricated

TIMBER CONSTRUCTION

IN THESE DAYS OF strategic metal shortages and of great expansion in industrial plants, the problems of housing both men and machinery are being met largely by the lumber industry and its modern methods, *i.e.*, streamlined prefabrication at the timber source; assembly at site of erection, with specialized fastenings, and erection in large units.

Very few Pacific Coast citizens realize how great is the demand for this type of timber construction, and how much of it originates in our Pacific Northwest.

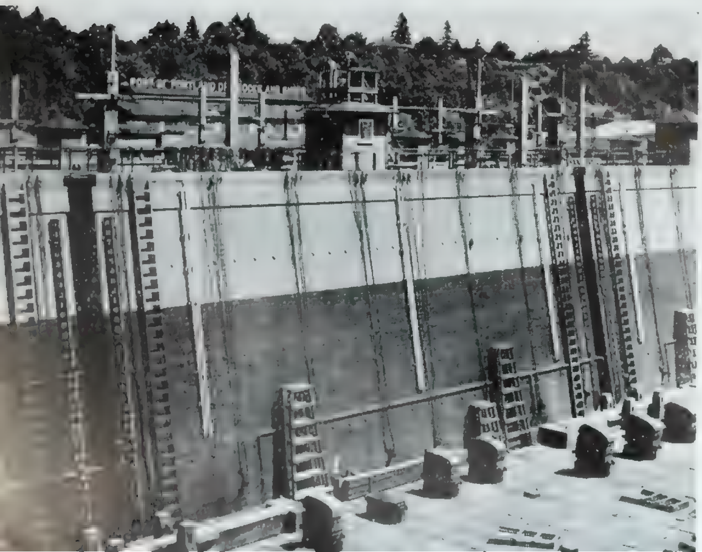
During and after World War I, the countries of Continental Europe had to turn largely to timber for industrial plant and housing. Since their supply of timber is confined to small and medium sizes, the problem of fastenings became paramount. Great research capacity was concentrated on this problem and many new and excellent types of fastenings were created and some forgotten types revived.

In the late '20s, all of the new European timber construction methods were thoroughly tested at the Forest Products Laboratory of the U. S. Department of Agriculture. The National Lumber Manufacturers Association became interested in these tests and formed the Timber Engineering Company, Inc., Washington, D. C., to take over American rights to the patents and to carry on research and provide engineering service to timber users. Under this organization, the best of the European fastenings were adapted to American timber technique and greatly improved.

Timber Engineering Company of California is the sales and engineering service licensee of Timber Engineering Company, Inc., covering a great expanse of the earth's surface, including the eleven Western States, the territories of Alaska and Hawaii, and all the U. S. island possessions in the Pacific Ocean. This firm maintains offices and warehouses in San Francisco, California, and in Portland, Oregon. A. C. Horner is president and owner, and P. E. Magerstadt is chief engineer and general manager.

This system of timber construction fastenings and prefabrication design is marketed under the trade name of Teco.

Many huge buildings in the shipyards of the Pacific Coast have been erected almost overnight by using the Teco system. A striking instance is the mold loft building in one of the larger yards specializing in the EC-2 (Liberty) type steamers. This building is a two-story structure covering three-quarters of an acre, and its upper floor being a mold loft, its roof must be supported by single-span trusses leaving an open, uninterrupted mold loft floor. (The mold loft floor is really a drawing board on which the naval architectural draftsman lays out the lines of the hull full size so that from these lines molds or templets can be lifted to guide the shipfitter in shaping the



LEFT: These drydock towers were built with Wolmanized timber and Teco fastenings.

RIGHT: TIMBER tower for 83-foot piledriver with Teco construction.

frames and plates of the hull.) This building is 132 feet wide by 260 feet long.

Initial order for design and prefabrication was received March 3. The structure was detailed in the office and completely fabricated at the plant. First delivery of material at the site was on the evening of March 11. By March 17, the complete frame of the building had been erected and partly sheathed. Four full eight-hour shifts and a small crew on three swing shifts erected the complete frame.

Teco system of timber joints features methods that spread the load on the joint over the maximum cross section of the wood. This allows in timber trusses the use of lighter wooden members than would be possible when fastening by ordinary nailing or bolting. This feature of Teco system is peculiarly valuable in the design of timber towers, such as: oil well derricks, tank towers, pile driver derricks, and radio towers. If military censorship permitted, we could give many instances of remarkable design and erection records in such structures prefabricated to Teco designs in Pacific Coast mills and erected in practically every country in the Western Hemisphere.

In the timber construction and reconstruction of all floating drydocks, of barges and caissons, of piers and pier sheds, Teco system means precision in design and prefabrication and consequently great savings in time and labor of assembly and erection.

These savings have been proved in many timber structures built during the past decade and the Teco system today is proving itself of great value in expediting the production of war materials by providing speedy expansion of plant housing.

●

TIMBER TRUSS over mold loft floor, Pacific Coast Shipyard.

TIMBER STRUCTURES in a Puget Sound Shipyard.

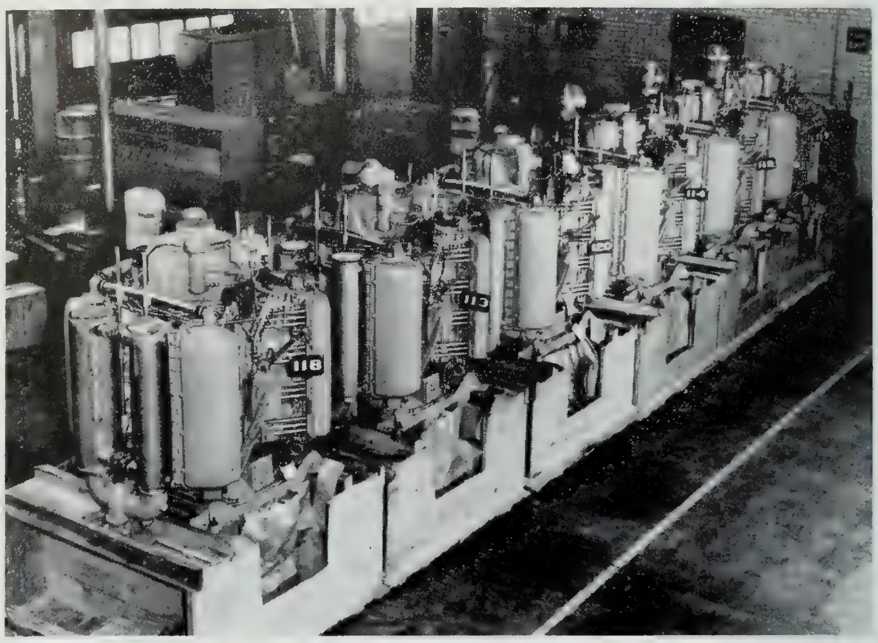
TIMBER ROOF TRUSSES over a steel frame compose this large plate shop in a Pacific Coast yard.

Keep Posted!

NEW EQUIPMENT AND MACHINERY

for . . .

YARD SHIP and DOCK



A GROUP of the new General Motors "pancake" diesels awaiting shipment.

NEW DIESEL FOR SUB CHASERS

ELECTRO-MOTIVE Division of General Motors Corporation is in full production of a new high-speed, high-horsepower, lightweight diesel engine and variable pitch marine propeller which add materially to the cruising radius, speed and maneuverability of United States sub-chasers.

The new diesel has been dubbed "the pancake" because of its unusual construction. Four banks of four cylinders each are located around a vertical crankshaft. The engine, reduction gear and propeller pitch control are designed as a complete unit, using a bevel pinion and gear between the engine and propeller shaft. Because of the use of the reversible propeller, there is no necessity for reversing the engine, or providing reverse gears for the propeller shaft. Every effort has been made to reduce weight of the complete installation, and the engine is believed to be the lightest ocean-duty diesel engine in the world. It occupies about one-third the space of the best previous diesel engines of the same high horsepower.

The weight and space gained by the use of the new engine and propeller can be utilized for more fuel for greater range, or for additional armament and ammunition, lighter overall weight for more speed or for the installation of more engines to give greater speed. In actual current practice, a combination of all these gains is designed into the newer sub-chasers.

Two of the new engines are being installed in the smaller type of sub-chaser currently being built, and the ships, which are being delivered to the Navy, are satisfactorily meeting the design requirements.

Use of diesel engines eliminates the fire hazard attendant upon attempts to get high horsepower with low weight by using gasoline engines. Diesel powered boats are less vulnerable to air attack. The variable pitch propeller is an important factor in improving cruising range and provides exceptional maneuverability.

Development of the new engine grew out of the search by the Navy for such a power plant since the end of World War I. Approximately a year before Hitler marched on Poland, the problem was discussed with Charles F. Kettering, vice president of General Motors in charge of research. Mr. Kettering directed the development of the engine in General Motors research laboratories at Detroit. Concurrently the laboratory was working on the reversible propeller as a separate project.

Several engines were built in the GM laboratory during the experimental period. The engine design was approved and Electro-Motive Division was designated as manufacturer in January, 1941. Within twelve months, an addition to the Electro-Motive diesel locomotive plant was built and equipped, despite difficulties of securing machinery during 1941, and a number of production engines turned out. These were put through the usual period of development test operation and regular production was started, with the result that in May of this year the production rate was up to Navy requirements.

Universal Life-Saving Suit

This excellent photo taken recently at the U. S. Maritime Training Station, Port Hueneme, California, shows one of the apprentice seamen doing a "swan dive" in the Universal rubberized balloon-cloth life-suit, designed to save seamen's lives when they are forced to leap into water from disabled ships.

The Universal life-suit has several outstanding features. One, of great importance, is the lucite face-mask which affords protection from oil, but enables the seaman to see without any hindrance. This face-piece is non-shatterable and non-inflammable.

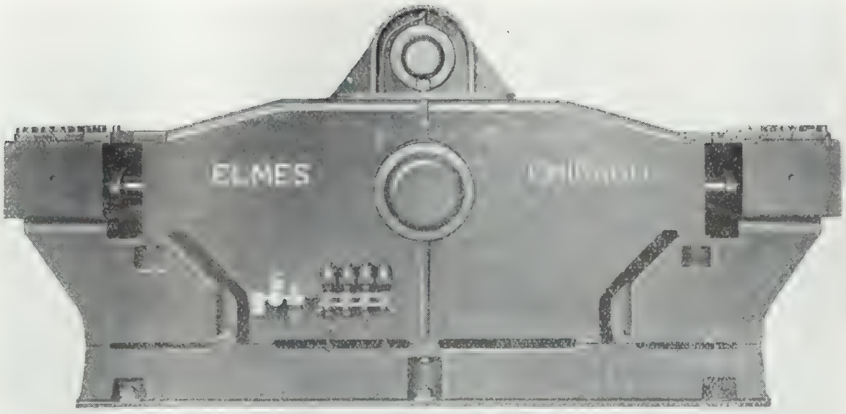
Another feature is the extreme lightness and pliability of the suit, which—weighing only 12½ pounds—enables the wearer to move about freely in water and on board ship, using arms and legs without any hindrance.

The hood can be tilted back, during work periods, or in tropical waters.

Production on this suit has started at the United States Rubber Company in Mishawaka, Indiana.

The Universal life-suit is approved by the U. S. Coast Guard.

AN APPRENTICE seaman doing a swan dive in the Universal life-saving suit into the swimming pool at U. S. Maritime Training Station, Port Hueneme, California.



HYDRAULIC PRESSURE PUMP

New Hydraulic Pump

The illustration above shows a 6-plunger, fully enclosed, horizontal, hydraulic pump—an addition to a broad line manufactured by the Charles F. Elmes Engineering Works.

The pump is modern in appearance and embodies the latest principles of design and construction. All moving parts are pressure lubricated, and the connecting rods run in a continuous bath of oil. Roller bearings are used throughout.

Maximum capacity of the pump is 400 horsepower. Herringbone gears, running in a continuous bath of oil, are used for driving the pump, insuring long gear life. The compact arrangement of the pump is a space saver, and it is particularly adaptable for accumulator systems.

The pump can be equipped with built-in bypass valves or safety valves, as may be desired. Complete data covering the features of this pump will be furnished gladly by the Charles F. Elmes Engineering Works.

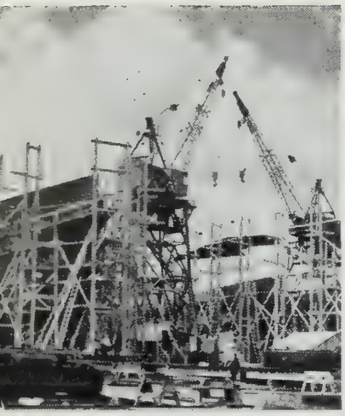
Ball Tooth Universal Joints

The line of Consolidated Ball Tooth universal joints distributed on the Pacific Coast by Brooks Equipment Corporation of California has been developed to fill a demand for flexible joints having a wide range of angle at which they may be installed and operated. This ball and socket design has a positive and effective operating range from zero to 92 degrees; it provides greatly - increased strength through positive and larger surface contact, giving additional smoothness of operation and durability and life to the joint. A most important feature is that direct lubrication is provided to the point of contact between each ball and socket.

Remote controls can be designed with this joint for installations up to 92 degrees for convenience and effectiveness in clearing structural parts, machinery, piping or other obstacles. These joints are designed for two classes of service, Type "B.J.H." for hand operation, and Type "B.J.B." for semi-power operation.

Brooks Equipment Corporation has established headquarters at 461 Market St., San Francisco, under the management of Louis B. Krieger; and at 436 E. Washington Blvd., Los Angeles, in charge of H. J. Wright.

(Page 104, please)



On the Ways—

SHIPS IN THE MAKING

SHIP DELIVERIES CONTINUE TO RISE

American shipbuilders continued to set new ship construction records during the month of July, Admiral Emory S. Land, Chairman of the U. S. Maritime Commission, stated in announcing that 71 new cargo ships and tankers were delivered into service during that month.

The 71 vessels of 790,300 deadweight tons are a new world's record for steel ship construction and surpass the mark made in June when American shipyards turned out 67 new ships of 748,154 deadweight tons.

Included in the ships delivered during July were 52 Liberty ships, 8 cargo carriers for British account, six large tankers, two C-1 vessels, two C-2s and one large Great Lakes ore carrier.

For the first time in several months East Coast yards led the nation. The Bethlehem-Fairfield Shipyard, Inc., Baltimore, Maryland, completed 12 Liberty ships for individual honors. East Coast yards wrested the pace-setting honors from the Pacific Coast with a total of 30 deliveries as compared to a total of 27 by the West Coast. Yards along the Gulf Coast continued to show steady improvement with 13 deliveries, the best month's total to date.

The new record was achieved despite a shortage of steel felt by some yards. It marked the steady increase that has been made with each month. The 1942 total to date is 299 ships of 3,338,515 deadweight tons.

The month also witnessed the delivery of the 30th ship by the Richmond No. 1 yard of Permanente Metals Corporation, Richmond, California, and the completion of its contract for building that number of cargo ships for the British. This yard will now turn out vessels of the Liberty ship type.

SHIPYARD	NUMBER	TYPE OF SHIP
Alabama Dry Dock & Shipbuilding Company Mobile, Alabama	3	Liberty
Bethlehem-Fairfield Shipyard, Inc. Baltimore, Maryland	12	Liberty
Bethlehem-Sparrows Point Shipyard, Inc. Sparrows Point, Maryland	1	Tanker
California Shipbuilding Corp. Wilmington, California	10	Liberty
Delta Shipbuilding Company, Inc. New Orleans, Louisiana	3	Liberty
Federal Shipbuilding & Dry Dock Co. Kearny, New Jersey	1	C-2
Great Lakes Engineering Works River Rouge, Michigan	1	Ore Carrier
Gulf Shipbuilding Corporation Mobile, Alabama	1	C-2
Houston Shipbuilding Corporation Houston, Texas	4	Liberty
Kaiser Company, Inc. Vancouver, Washington	1	Liberty
North Carolina Shipbuilding Company Wilmington, North Carolina	5	Liberty
Oregon Shipbuilding Corporation Portland, Oregon	9	Liberty
Pennsylvania Shipyards, Inc. Beaumont, Texas	2	C-1
Permanente Metals Corporation Richmond, California (Richmond No. 1)	3	British
Permanente Metals Corporation Richmond, California (Richmond No. 2)	4	Liberty
South Portland Shipbuilding Corporation South Portland, Maine	1	Liberty
Sun Shipbuilding and Dry Dock Company Chester, Pennsylvania	5	Tankers
Todd-Bath Iron Shipbuilding Corp. South Portland, Maine	5	British
Total	71	

Pacific Coast Yards Get Wooden Barge Awards

Contracts for the construction of 26 wooden barges have been awarded to three shipbuilding companies on the Pacific Coast, the Maritime Commission announced early in August.

The barges to be constructed are to be 274 feet long, will have a draft of 20 feet six inches, and a deadweight tonnage of 3750 tons.

The three companies awarded contracts are: **Edlund Logging Company** and **Berg Shipyard,** with offices at Seattle and yard at Anacortes, Washington, for 12 barges at $538,000

PERFORMANCE RECORD OF LIBERTY YARDS

Performance records established by American shipyards engaged solely in construction of emergency cargo vessels—Liberty ships—since the inception of the program with awards of the first contracts for facilities by the British in December, 1940, and by the United States in January, 1941, were announced last month by the Maritime Commission. Achievements by the yards which have delivered Liberty ships and the British vessels are shown up to August 1, 1942, on the dual basis of construction of facilities as well as of the vessels.

Heading the list with the most records made is the **Oregon Shipbuilding Corporation,** Portland, Oregon, managed by Edgar F. Kaiser. That yard has built the most ships per way, constructed a ship in the shortest time, and produced vessels in the shortest average time per ship.

The Bethlehem-Fairfield Shipyard, Inc., of Baltimore holds the record for the shortest time elapsed from the date of the original contract for facilities until the laying of the first keel, and ranks second in the shortest time for construction of a vessel, and fourth in the number of ships produced per way.

In second position for the number of ships produced per way is the **California Shipbuilding Corporation,** Wilmington, California—Los Angeles Harbor—ranking third in the shortest production time for a ship.

Holding second place in the total number of ships built are the **Richmond Shipyards** at Richmond, California, also under Kaiser management. Both U. S. Liberty and British ships have been produced there. They rank third in the number of ships built per way, and second in the average production time per ship.

	Number of Active Ways	Rank	Ships Built	Rank	Ships per Way	Rank	Average Days per Ship	Rank	Shortest Time For One Ship (days)	Rank	Shortest Time from Contract to Keel-laying (days)	Date of First Facilities Contract Award
Oregon Shipbuilding Corp. **Portland, Oregon**	11	(1)	54	(1)	4.909	(1)	108	(1)	46	(4)	129	Jan. 10, '41
Bethlehem-Fairfield Shipyard, Inc. **Baltimore, Maryland**	16	(3)	46	(4)	2.875	(3)	139	(2)	59	(1)	103	Jan. 17, '41
***Richmond Shipyard No. 1 and No. 2** **Richmond, California**	16	(2)	47	(3)	2.938	(2)	133	(4)	67	(2)	115	Dec. 20, '40
California Shipbuilding Corp. **Wilmington, California**	14	(4)	45	(2)	3.214	(4)	152	(3)	65	(5)	134	Jan. 10, '41
North Carolina Shipbuilding Corp. **Wilmington, North Carolina**	9	(5)	20	(5)	2.222	(5)	170	(5)	72	(3)	125	Jan. 17, '41
***South Portland Shipbuilding Co. and Todd-Bath Yard, South Portland, Me.**	13	(6)	18	(7)	1.385	(6)	208	(6)	98	(6)	155	Dec. 20, '40
Alabama Shipbuilding & Dry Dock Co. **Mobile, Alabama**	4	(8)	6	(6)	1.500	(8)	241	(7)	160	(7)	182	Jan. 17, '41
Houston Shipbuilding Corp. **Houston, Texas**	9	(7)	9	(8)	1.000	(9)	276	(8)	204	(8)	189	Jan. 10, '41
Delta Shipbuilding Co., Inc. **New Orleans, Louisiana**	7	(9)	5	(9)	.714	(7)	228	(9)	191	(9)	257	Jan. 17, '41

*These yards have produced both British and U. S. Emergency Cargo ships.

per barge, on a fixed price basis; **Larson Yards, Inc.,** Astoria, Oregon, for six barges at $451,644 each, on a fixed price basis; and **Olympic Shipbuilders,** office at Seattle, and yard at Port Angeles, Washington, for eight barges at $553,879 each, on an adjusted price basis.

The Edlund Logging Company-Berg Shipyard contract calls for the delivery of the first barge within 210 days and the last within 320 days from the date of award. The Larson Yards and the Olympic Shipbuilders contracts call for delivery of the first barges within 210 days and the last within 390 days.

Double Launching From One Basin

All records in production of "Coasters" were shattered on August 25 at the Pacific Bridge Company, Yard No. 1, in Alameda when two U. S. M. C. cargo vessels—the *Reuben Snow* and *Caleb Sprague* — were launched 22 working days after the keels were laid, and simultaneously christened in midair from a platform suspended from a huge gantry crane.

The sponsor for the *Reuben Snow* was **Miss Vivien Marie Boersig,** daughter of **R. E. Boersig,** general superintendent of hulls; and **Miss Margaret Angel Rasmussen,** daughter of **T. A. Rasmussen,** loft superintendent, sponsored the *Caleb Sprague.*

With keels laid end to end, these ships were built in a graving dock—a sunken shipway—eight feet below the water level of the Oakland Estuary. When ready for launching the caisson gate was floated and two million gallons of water flooded the basin and floated the hulls. The boats were then towed to the outfitting dock.

This graving dock operation, along with the prefabrication production system, enables the Pacific Bridge Company to do an outstanding job in the war effort.

Among those included in the launching party at the ceremonies were the sponsors, their attendants, the **Misses Marion Dow** and **Beverly Spitzer; E. J. Fallon,** general manager Shipbuilding Division, Pacific Bridge Co.; **R. E. Boersig,** yard superintendent; **William B. Fawke** and **James Smith,** Maritime Commission inspectors.

Tug Bids Received

Bids from 27 contractors in 12 states for the construction of ocean-going wooden tugs of the V3-S-AH2 design have been received, the Maritime Commission announced early in August. Shipbuilders from California

TODD PRESENTS MASS LAUNCHINGS IN MAINE

JOHN D. REILLY, President
Todd Shipyards Corporation

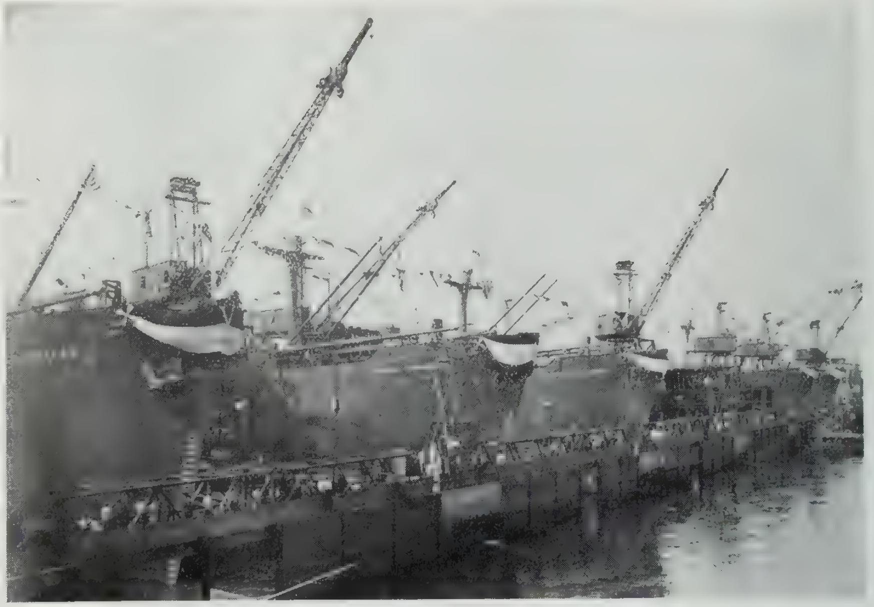
WILLIAM S. NEWELL, President of Bath Iron Works, South Portland Shipbuilding Corp., and Todd-Bath Shipbuilding Corp.

submitted 6 bids, while the states of Illinois, Washington and Wisconsin offered 3; Texas, Florida, New York and Maine submitted 2 each; and Oregon, Minnesota, Maryland and Michigan submitted one each.

The vessels to be constructed will be 150 feet in length, can be used for deep-water work, and are being constructed primarily as propulsion units for both concrete and wooden barges now being built.

Argentina Shipbuilding

Rear Admiral Mario Finacti, Minister of Marine, states that the Government of Argentina is planning to create a shipbuilding industry so that the nation's merchant marine will be on a competitive basis after the war.



FIVE BRITISH VICTORY CARGO STEAMERS in their basins at Todd-Bath yard ready for the mass christening.

TODD YARDS LAUNCH 8 IN ONE DAY

A launching of five merchant ships, the first event of this size to be held in an American shipyard since the start of this country's vast emergency ship construction program, took place at the Todd-Bath Iron Shipbuilding Corporation yard, South Portland, Maine, on Sunday, August 16. This was part of the greatest mass launching of ships in a single day in the history of the State of Maine, when a total of six cargo vessels and two destroyers were launched.

In addition to the five vessels at Todd - Bath, a Liberty ship was launched at the adjoining yard of South Portland Shipbuilding Corporation, also a Todd Shipyards Corporation affiliate, while two destroyers slid down the ways at the Bath Iron Works Corporation, Bath, Maine.

The five ships at Todd-Bath, constructed for the British Ministry of Shipping, were launched in a space of 15 minutes. They have been built in sunken basins and are launched by admitting water into the basins until the water level reaches that of the bay, at which point the vessels are fully afloat. The gates of the basin are opened and tugs pull the ships out to the fitting-out dock.

The following is a list of the British freighters and their sponsors:

Ocean Wayfarer, Mrs. Ralph O. Brewster, of Dexter, Maine, wife of the junior United States Senator from Maine.

Ocean Stranger, Mrs. Harley M. Kilgore, of Beckley, West Virginia, wife of the senior United States Senator from West Virginia.

Ocean Traveller, Mrs. Joseph Haag, Jr., of New York, wife of a vice president of the Todd Shipyards Corp.

Ocean Seaman, Mrs. Alexander Symon, of Washington, D. C., wife of a director of the British Ministry of Shipping of Washington, D. C.

Ocean Gallant, Mrs. Peter V. O. Evans, of Portland, Maine, wife of a director of the British Ministry of Shipping in Portland, Maine.

The Liberty ship *Ethan Allen,* launched at South Portland, was sponsored by Mrs. Harvey Dow Gibson, of New York, wife of the president and chairman of the board of the Manufacturers Trust Company.

The two destroyers launched at Bath are the U. S. S. *Conway* and the U. S. S. *Cony.* Mrs. Frank E. Beatty, of Arlington, Virginia, wife of Captain Frank E. Beatty, U. S. N., Naval aide to the Secretary of Navy, sponsored the *Conway*. Mrs. William R. Sleight, of Eastport, Maine, a first cousin of the late Acting Master Joseph S. Cony, in whose honor the destroyer is named, sponsored the *Cony*.

Richmond Launches Liberty in 24 Days

Shattering by 11 days the previous record time of launching a Liberty, the Richmond Shipyard Number Two put the *John Fitch* into the water on Harbor Day, August 28, just 24 days after laying the keel.

This vessel was named after the man who pioneered the steamboat 25 years before Robert Fulton built his *Claremont*. In reference to the name of this vessel, Clay Bedford, general manager of the yard, had this to say: "They thought Fitch was crazy trying to do such an impossible job. Well, they told us it was impossible to launch a ship in 24 days—but we're doing it. I think Fitch had a lot in common with Mr. Kaiser and our boys."

"Libertys" Named For Labor Leaders on Labor Day

America's shipbuilders, engaged in the greatest merchant ship construction program of all time, observed Labor Day by launching six Liberty ships.

All of the 60 shipyards, which are rushing to turn out 2300 new ships by the end of 1943, were open for work on Labor Day, Rear Admiral H. L. Vickery, vice chairman of the Maritime Commission, stated. Each yard held a brief ceremony to mark Labor's contribution to the war effort.

Each one of the six new Liberty ships was named after prominent labor leaders who have made vital contributions toward the cause of labor. With four ships off the ways on the West Coast and two in the East, a coast-to-coast broadcast over the Mutual network linked the launching ceremonies. The names of the vessels and the yards at which they were launched are as follows:

***Samuel Gompers*, California Shipbuilding Company, Wilmington, California**

***Andrew Furuseth*, Richmond Shipyard No. 1, Richmond, California**

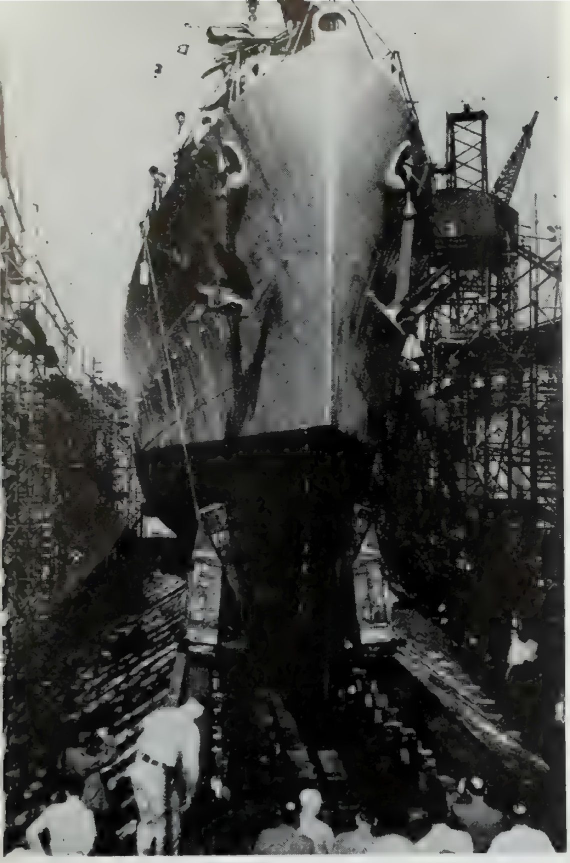
***Peter J. McGuire*, Richmond Shipyard No. 2, Richmond, California**

Sponsors of Mass Launchings

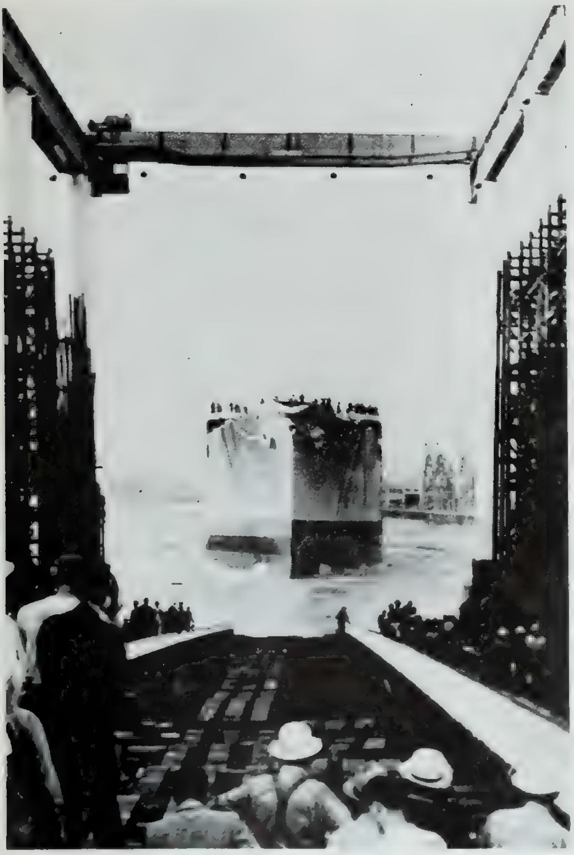
MRS. HARVEY DOW GIBSON christens Ethan Allen, a Liberty type cargo steamer, at the South Portland Shipbuilding Corporation (a Todd affiliate). She felt that she had the appropriate authority, but judging by the picture, she scarcely kept her "powder dry."

LEFT TO RIGHT: Mrs. Frank E. Beatty, Arlington, Va., wife of the Naval Aide to the Secretary of the Navy, sponsored U. S. S. Conway; Mrs. Peter V. O. Evans of Portland, Me., wife of a director of the British Ministry of Shipping, sponsored Ocean Gallant; Mrs. Joseph Haag, Jr., New York, wife of a vice president of Todd Shipyards Corp., sponsored Ocean Traveller; Mrs. Harvey Dow Gibson, New York, wife of president and chairman of the board of the Manufacturers Trust Company, sponsored Ethan Allen.

LEFT TO RIGHT: Mrs. Harley M. Kilgore, Beckley, W. Va., wife of senior United States Senator from West Virginia, sponsored Ocean Stranger; Mrs. Ralph O. Brewster, Dexter, Me., wife of the junior Senator from Maine, sponsored Ocean Wayfarer; Mrs. Alexander Symon, Washington, D. C., wife of a director of the British Ministry of Shipping, sponsored Ocean Seaman; Mrs. William R. Sleight, Eastport, Me., cousin of the late Joseph S. Cony, Acting Master, U. S. N., sponsored the U. S. S. Cony.



U. S. S. DESTROYER CONY slides down the days at Bath Iron Works.



U. S. S. AJAX takes to the water at Los Angeles Shipbuilding and Drydock Corporation yard, San Pedro, on August 22. Mrs. J. C. Johnson, wife of Admiral Johnson, U.S.N., Director Naval Procurement, was sponsor, and her daughter, Mrs. Alfred J. Bolton, wife of Lieut. Bolton, was matron of honor.

James Duncan, **Oregon Shipbuilding Corporation, Portland, Ore.**

John Mitchell, **Bethlehem-Fairfield Shipyard, Baltimore, Maryland**

John W. Brown, **Bethlehem-Fairfield Shipyard, Baltimore, Maryland.**

On the West Coast, John Frey, president of the Metal Trades Department of the American Federation of Labor, spoke at launching ceremonies of the *Samuel Gompers* at California Shipbuilding. Immediately following his address the broadcast switched to the Bethlehem-Fairfield yard at Baltimore, where John Green, president of the Industrial Union of Marine and Shipbuilding Workers of America (CIO), spoke at the launching of the *John Mitchell* and the *John W. Brown*.

Iowa Launched

Seven months ahead of schedule, the 45,000-ton battleship *Iowa*, the largest battleship ever built, slid down the ways of the New York Navy Yard on August 27.

An Iowan, Mrs. Ilo Brown Wallace, wife of Vice President Wallace, sponsored the first of six super battleships that will soon be spitting deadly fire at Axis objectives.

Fifth Subchaser Launched

Harbor Boat Building Company, Terminal Island, Calif., launched PC-726, their fifth subchaser of a series, on August 12.

Myles Rados, vice president of the company, thanked the employees for their increasing production and cooperation, and then introduced Miss Helen Jessing, the oldest girl employee, who promptly christened this addition to our increasing Navy.

Federal Launchings

The following are launchings of the Federal Shipbuilding and Dry Dock Company, U. S. Steel subsidiary:

On August 15, the destroyer U. S. S. *Waller* was launched. She was christened by Mrs. Littleton W. T. Waller, of Philadelphia, Pa., in honor of her husband, the late Major General Littleton W. T. Waller, U. S. M. C.

On August 26, twin destroyers went down the ways.

Simply the smashing of a bottle of champagne marked the christening of the destroyer *Glennon*, the first to hit the water. It was sponsored by Miss Jeanne LeJeune Glennon, of Washington, D. C., in honor of her grandfather, the late Rear Admiral James Henry Glennon, U. S. N. Miss Glennon is the daughter of Captain James B. Glennon, U. S. N., and a niece of Lieutenant Commander Harrison R. Glennon, U. S. N. (Ret.), sons of Admiral Glennon.

Soon afterward, the destroyer *Jeffers* was launched. It was christened by Mrs. Lucie Jeffers Lyons of New York in honor of her great-grandfather, the late Commodore William N. Jeffers, U. S. N.

Seeandbee Now Aircraft Carrier

The *Seeandbee*, up until recently a luxurious passenger carrier on the Great Lakes, has been converted into an aircraft carrier and was commissioned at Chicago on August 23, under the name U. S. S. *Wolverine*. She will be used on the Great Lakes to train thousands of Navy airmen in carrier tactics. The *Wolverine* has side-wheel propellers and is probably the only aircraft carrier in the world with this type of propulsion.

SHIP REPAIRS

(Continued from page 55)

of the war-wrought depression of world commercial activity. To serve this need, it is to be expected that greater maritime transport facilities will be required, great numbers of new bottoms built and countless numbers of vessels surviving the war will be in need of repair.

The Los Angeles Shipbuilding and Drydock Corporation, with its greatly-expanded facilities will be in the position to meet any maritime contingency. If, as it has been said, "ships will win the war," then ships will surely win the peace which is to follow. The leaders of this corporation are firm in the belief that America will take a great and active part in the winning of the peace to follow World War II, and are keenly alert to the promise of a fine and enduring future for Los Angeles Harbor. They are determined to share in this future, by being prepared to serve its commerce carriers well.

STEADY AS YOU GO

(Continued from page 79)

weather, or, by the replacement of a cold current of air by a warm one after a spell of cold weather.

QUESTION

Why is there more rain on the polar side of a cyclone than on the Equatorial side?

ANSWER

Because winds that enter a cyclonic system on its polar side are relatively colder than the air they displace, and so condensation of the moisture in the warmer air is caused.

QUESTION

What is a waterspout; how is it caused?

ANSWER

It is caused by two air currents of different temperatures colliding in the higher regions of the atmosphere, the air being deflected upwards and downwards. The visible vapors descend to the surface of the sea in a narrow column of whirling air current.

QUESTION

Is the moon above or below the horizon at the North Pole?

ANSWER

It remains continuously above the horizon for about two weeks and below the horizon for the same length of time in each lunar month throughout the year.

QUESTION

What is meant by "waxing" and "waning" of the moon?

ANSWER

A waxing moon is a crescent moon with the open side to the east.

A waning moon is a crescent moon with the open side to the west.

QUESTION

In adjacent oceans, how are currents caused by waters of different densities?

ANSWER

In adjacent bodies of water having different densities, the less dense water flows into the other on the surface; the water with the greater density flows into the water with the lesser density well below the surface.

A good example of this is in the Straits of Gibraltar, where the water of the less dense Atlantic flows into the denser Mediterranean Sea on the surface. The water from the Mediterranean Sea flows into the Atlantic well below the surface.

No really large rivers feed the Mediterranean and the water needed to replace that taken from it by normal surface evaporation flows in from the Atlantic through the Straits of Gibraltar. This flow sets up a current so strong that the relatively frail craft of the early Mediterranean traders could not reach the Atlantic except under very favorable circumstances. This situation restricted early commerce to the Mediterranean and probably explains why all the early voyages of discovery that took seamen around the Cape of Good Hope were begun at points outside the Mediterranean in Spain and Portugal.

PROBLEMS ANSWERED

(Continued from page 81)

volts, but at 45 rpm we have 1000 volts. We have reduced the field strength and saved excitation kilowatts, at the same time keeping the maximum torque above any value that might be suddenly demanded.

The accompanying diagram of connections covers this regulator.

There are no moving parts to the regulator. It operates by means of balanced circuits, sensitive to frequency and voltage to control the field excitation on the amplidyne exciter which in turn furnishes voltage to the fields of the main exciter.

An explanation of the amplidyne exciter will be given in the next article.

In this diagram will be noticed the transfer switch which allows a selection of one or two complete excitation systems. This switch is marked 100 in the diagram shown in the July issue.

The two squares marked + and — are dry plate rectifiers, which rectify the ac voltage coming in from the potential transformers over wires 1 and 2, to dc, a variable portion of which is then impressed on the buck and boost fields of the amplidyne. The combination of these fields gives an excitation voltage, which raises field with increase in speed and frequency, and lowers field with lower speed.

TRADE NOTES

W. S. SHIPLEY

William S. Shipley, chairman of the board of the York Ice Machinery Corporation, York, Pennsylvania, has been appointed director and vice chairman of the War Production Board's Small War Plants Corporation. The appointment, which was announced recently by Donald M. Nelson, WPB chief, recognizes Mr. Shipley's ability as author and prime mover of the York plan for bringing small plants into war production. Mr. Shipley and his four fellow directors will be authorized to spend $150,000,000 approved by Congress to assist smaller firms in getting war contracts.

Dan C. Hungerford has resigned as vice president and director of the Elastic Stop Nut Corporation, Union, New Jersey. He joined the corporation in 1936 as field engineer and eighteen months later was made chief engineer.

In January, 1940, he was elected to the board of directors and in July of the same year was made vice president in charge of engineering.

Lynn A. Williams, Jr., secretary of Stewart-Warner Corporation and head of the company's legal department, was elected a vice president of the corporation by the board of directors. In his new position he will continue all his former corporation duties.

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Disappearance Losses Clarified

The War Shipping Administration on August 24 announced the conclusion of negotiations between the Administration and the American Institute of Marine Underwriters looking toward the establishment of a basis for settling hull and cargo insurance claims where, by reason of the disappearance of a vessel, it is impossible to determine whether the cause of loss is of a marine or of a war-risk nature.

Under the procedure embodied in this agreement, in the event of such a loss, an endeavor will be made by both parties, to arrive promptly at the cause of the loss. Failing an agreement on this point, the question will be submitted to arbitration, and the arbitrator will determine what portion of the claim shall be advanced by each party, or whether the entire amount of the claim will be advanced by one party. Subsequent to such arbitration, the War Shipping Administration, and the marine underwriters involved, will give each other mutual guarantees as to the ultimate settlement of the loss when the cause of loss is finally determined.

Under the terms of the agreement, the arbitration leading up to advances to be made to policy-holders will be of an informal nature. A number of leading members of the Admiralty bar are to be asked to act as arbitrators in this connection.

The American Institute of Marine Underwriters have had favorable replies regarding this plan from many offices in their market. Further details of, and signatories to the agreement will be announced after execution.

Small Craft Requisitioned

Many hundred small vessels of all types have been requisitioned by the War Shipping Administration since the start of the war for either the Coast Guard or the Navy.

These small craft, used primarily for patrol boats and in some instances, submarine chasers, are playing an important part in the nation's war effort, and many of them already in service have achieved creditable war records.

For the most part, these vessels, which are 1000 gross tons or less, are requisitioned for title or charter by the War Shipping Administration. While many are donated by patriotic owners, requisition for title or charter is considered the most feasible method of acquisition, since under other circumstances the Government would be responsible for the restoration of the boats after the emergency is over.

Prices paid for the boats range anywhere from $750 for small pleasure launches to as high as $300,000 for the large steel trawlers, the latter being considered the most easily converted to any type of patrol work necessary. Many of the craft are obtained on a charter basis for as long a time as they may be useful in the war effort.

This armada of small vessels includes fishing boats, purse seiners, harbor tugs, deep-sea tugs, ferryboats, excursion boats, seagoing yachts, power launches, barges, scows, and lighters. In order to expedite acquisition of and payment for such craft, the WSA created a Division of Small Vessel Procurement, headed by Lieutenant-Commander Edmond J. Moran.

An Effective Anti-Corrosive

There seems to be a growing practice of treating marine engines and other equipment with a chemical which is said to be very effective in resisting corrosion. Known commercially as PiB, this preparation has been on the market for about three years. Extensive testing in the marine field during this period appears to have established its value to the point where it is used as a preventive by a number of large commercial operators.

The liquid is sprayed or brushed on batteries, cables, wires, electrical connections and ignition parts. The makers state that in this application it is not only an effective anti-corrosive under the most severe conditions, but that it actually serves as a supplementary insulation.

At least one major oil company is now using the product on all diesel electrical connection and batteries of its tankers and oil barges, as well as on winch and hoist cables. It may well be considered for protection of lifeboat motors, which are now required equipment on all ships sailing the danger zones. PiB is offered by the manufacturers, PiB, Inc., New York, not only as a preventive, but as a "cure" which will enable anyone to start a wet motor even though its ignition parts and electrical connections have been thoroughly soaked.

LARGEST PRESS

(Continued from page 85)

Corp. undertook the planer work on the movable platen and the base, bored and ground the pull-back cylinders. Western Pipe & Steel Co. rolled the large cylinders from heavy sheet.

Mr. Pruett hounded the cooperating firms, parceling out small jobs to small machine shops. Meanwhile, he had other engineers figure stress analyses "on every bolt and nut in the job." He was taking no chances, for this was an important machine he was building. Should it break down, Liberty ships from Seattle to Maine might be delayed in going to sea. As a result of his day-and-night endeavor, ten weeks after the plans were completed the huge press turned out its first large ventilator half.

Although fabrication of ships' ventilators represents an unusual departure for a firm which, during its 44 years of manufacturing experience, has been turning out showcases, refrigerator equipment and similar goods, President Karl Weber declares he's ready to tackle any job his engineers think they can deliver.

Calship Leads Nation Again

Dramatic highlight of the nation's observance of its first wartime Labor Day in a generation was the launching by the California Shipbuilding Corp. of its 65th Liberty ship, the S. S. Samuel Gompers, at its record-breaking Terminal Island yard.

Reflecting the importance of the occasion is the fact that the launching was covered by four newsreel crews and 15 newspaper, syndicate and magazine photographers, as well as a corps of newspaper and wire service reporters. Columbia Broadcasting System carried the full half hour program on its network.

Smoke billowed from her funnel as the fleet freighter sped channel-ward seconds after **Mrs. John P. Frey** of Washington, D. C., wife of the President of the Metal Trades Division of the American Federation of Labor, broke the beribboned bottle on her bow.

Featured on the program, which immediately preceded the launching were addresses by **Mr. Frey, Mr. John A. McCone,** Executive Vice-President, California Shipbuilding Corp.; **Mr. C. J. Haggerty,** President, California Federation of Labor and **Mr. Lester A. Parker,** President Los Angeles Metal Trades Council.

Among the scores of distinguished guests were **Samuel Gompers Jr.,** retired U. S. Department of Labor official and son of the late, great labor leader in whose honor the ship was named: Mrs. Gompers, Jr. and Mrs. Parker, who were matrons of honor.

The launching of the Gompers came in the wake of the announcement by Rear Admiral **Howard L. Vickery,** Vice-Chairman of the U. S. Maritime Commission that California Shipbuilding Corp. which in June set a world's record in deliveries, again led the nation's yards for the month of August when it delivered 11 ships to the Commission.

Commenting on this new record performance, Mr. McCone said:

"Men of Calship, this yard, your yard, stands today as the greatest producer of Liberty ships in the United States. Ever since the middle of May, nearly four months ago, completed Liberty Ships have slipped away from our docks at an average of three each week.

In the principal speech of the day, Mr. Frey read the following excerpts from an address delivered in March, 1918, by Gompers:

"The worker who fastens the rivets in building the ship is performing just as necessary war service to our Republic as the sailor who takes the ship across, or the gunner in the trenches. This is the time when all workers must soberly face the grave importance of their daily work and decide industrial matters with a conscience, mindful of world relations to each act."

Above: The good ship Samuel Gompers makes a graceful slide. At left: John P. Frey at "mike." At right: John A. McCone commends workers. Lower left: Broadside view of S.S. Samuel Gompers afloat.

HOWARD TALLERDAY, president, awards $1000 Bond to lucky Shipwelder Melvin Turkelson.

What a Party! Is Verdict On Victory Bond Dance

THOUSANDS JAM CIVIC AUDITORIUM AS W. P. & S. EMPLOYEES GO TO TOWN IN RECORD-BREAKING JAMBOREE

WHEN WE TELL YOU that $6,150 in War Bonds were given away to employees of Western Pipe & Steel Company at their big Victory Bond Dance you will be able to judge the tremendous success of this memorable event! Countless members of the WP&S personnel labored long and diligently for weeks in advance of the jamboree held in San Francisco's Civic Auditorium on Saturday night, August 22nd.

A bang-up program of talent recruited from stage, radio and screen regaled the merrymakers and the dancing continued up to the curfew hour.

Howard Tallerday, president of the shipyard was kept busy delving into the mystic barrel containing the cards of everyone who was fortunate enough to attend. The entire event was conducted on a non-profit basis and practically the entire proceeds from a capacity "box-office" went into War Bonds, which in turn were distributed to the lucky winners.

So successful was the event in developing good fellowship and teamwork throughout the WP&S several divisions that this pattern of entertainment can very well be an inspiration to shipyards throughout the Nation!

San Francis

●

WHERE BUT IN SAN FRANCISCO could you find an All-Chinese welding crew setting new records! These boys are from San Francisco's famed Chinatown. Previously intermingled with other welding crews some one had the happy idea of grouping them as a team of their own. The Number One boy is Leaderman Bill Jow, a graduate of the University of California in Berkeley.

●

PRESIDENT TALLERDAY draws another lucky number while Joe Engbert of Materials and Joe Lacey, Coordinator, officiate. The little lady is Sugar Doane, "Wild West" entertainer, daughter of Ship-fitter John Doane.

MASTER OF CEREMONIES George Davis (left) introduces O. B. Kibele, yard superintendent (third figure) before capacity audience.

Center figures are Trainee Charles Thompson and his bride-to-be. To the right is General Superintendent L. W. Delhi.

LEO CARRILLO of Hollywood fame was one of the many stage, screen and radio stars to come aboard. The ladies are Bette Montgomery and Dorothy Rhine of the Personnel Department. President Tallerday wears a good likeness of himself on his lapel.

Knows

How!

Air Conditioning Aids Torpedo Boat Production

Production of P-T torpedo boats—those swift mosquito-like motorboats which can dash in, sink a battleship and dash away at a clip only a few miles per hour slower than record-holding speedboats—is being facilitated at the City Park Plant of Higgins industries, New Orleans, La., by a 60-ton air conditioning system to cool the administrative, drafting, training and personnel offices of the huge plant.

The City Park Plant was completed in October of last year and air conditioning has played a large part in turning out perfectly designed torpedo boats since the first unit started down the 300-foot assembly line in the factory.

The air conditioning system was specified by Weil & Moses, well known New Orleans consulting engineers, and installed by the Carrier Division of Higgins Industries. Cooling only the administrative, training, drafting and personnel offices, it has a capacity of 60 tons cooling and obtains maximum economy through a special refrigerating arrangement.

To save space, the refrigerating equipment was installed on the roof of a two-story building, which was enclosed under the main roof when the City Park Plant was expanded to its present size. Here are located two Carrier refrigerating machines and two evaporative condensers, compactly assembled. Carrier duct-type gas fired unit heaters warm the air during the short winter heating period.

The air conditioning units include one fan section per floor, and a single bank of direct expansion refrigerating coils with thermostatic controls in the return ducts. Dampered intakes on each unit connect with roof intakes, permitting admission of air from outside up to 65 per cent and the use of the system for ventilation only if desired.

Suspended in the ductwork are the gas unit heaters, flanged in at front and back and insulated tightly. Ranging from 150,000 to 225,000 Btu input heating capacity, the heating units utilize the same fans for year-round operation. The unit heaters are thermostatically controlled, but provision is made for manually altering the capacity according to occupancy requirements. Air is returned through three main ducts leading from the first and second floors and rising to the third floor, and drawn off the third and second floors only. The heaviest cooling load, according to the engineers, is concentrated on the second floor general offices. Distribution of cooled air throughout the building is by means of ceiling outlets, spaced 14 feet apart in the soundproofed ceilings on each floor. Controls are set to maintain a temperature of 80 degrees with 60 per cent relative humidity in all departments during summer.

The convenient roof-top location of the refrigerating plant made it possible to simplify the ductwork, and to operate the system economically to serve the entire large area. Refrigerating machines are regulated to operate in four steps through a 24-hour cooling period, utilizing 15-tons cooling capacity per step. At average operation, the plant will utilize only about 30 tons capacity, adding another 15 tons during hot afternoons, and the remaining 15 tons at peak load. Except for a short period each night, the system will run almost continuously throughout the year—heating in winter, cooling in summer or ventilating the building during intermediate seasons.

Westinghouse Expansion On Pacific Coast

An expansion program involving expenditure of several hundred thousand dollars, which is expected to enable material enlargement of the company's production for war, will get under way soon at the Emeryville, California, plant of the Westinghouse Electric & Manufacturing Company.

The program includes construction of a new building, realignment of equipment and facilities in present buildings and the installation of additional equipment, according to Chas. A. Dostal, Pacific Coast district manager for Westinghouse. Contract for construction of the new building was let July 24 to Barrett and Hilp, contractors, of San Francisco.

Including space gained by removal of a warehouse section to another location, the program will materially increase available floor space. The additional structure will increase overall length of the building.

The Western District of Westinghouse, of which Mr. Dostal is manager, extends from the Rocky Mountains to the Pacific Coast, from Canada to Mexico, and also includes Alaska and the Hawaiian Islands.

Extensive service and repair facilities and a large box shop will be housed in the new building. To conserve steel for makers of the actual weapons of war and for the machines which enable industry to produce those weapons, the building will be largely of wood and glass construction. It will include a main aisle in which heavier equipment can be handled, and several small aisles extending the length of the building.

When the expansion program is completed, a comparable increase in personnel is anticipated, it was said.

Columbia Steel Increases Production

Increased production of steel ingots and the breaking of twenty-five plant production records during the month of June was announced by Columbia Steel Company, subsidiary of United States Steel Corporation.

Biggest production increase was made by Pittsburg, Calif., Works, which showed an overall increase in the production of steel ingots of 10.9 per cent. Contributing to this record, one shop of open hearth furnaces showed an individual increase of 13.4 per cent for the month.

In all, Pittsburg Works broke nineteen plant records during June. Included in these were the Wire Rope Mill, which showed a production increase of 38.9 per cent, and the production of electric furnace foundry steel for ship castings up 15.3 per cent.

Torrance, Calif., Works broke six plant production records during June and set a six months' record in the production of steel castings with an increase of 17.7 per cent. It was also announced that engineering and maintenance crews of Torrance Plant had established decreases in the time for repairs as high as 20 per cent.

Looking for Trouble

. . . and insured against it. Engine failure is not included in the kind of trouble for which this marauder was built. Her deadly striking power must not be impaired — or the lives of her crew endangered by a breakdown of any kind. This is why American submarines of the latest types are equipped with both Sharples Diesel Lubricating and Fuel Oil Purifiers. Abrasives, water and sludge in lubricating oil are primary causes of engine trouble on sea-going craft and the Sharples application of centrifugal force is the proven way to continuously provide clean lubricating and fuel oil to Diesel engines.

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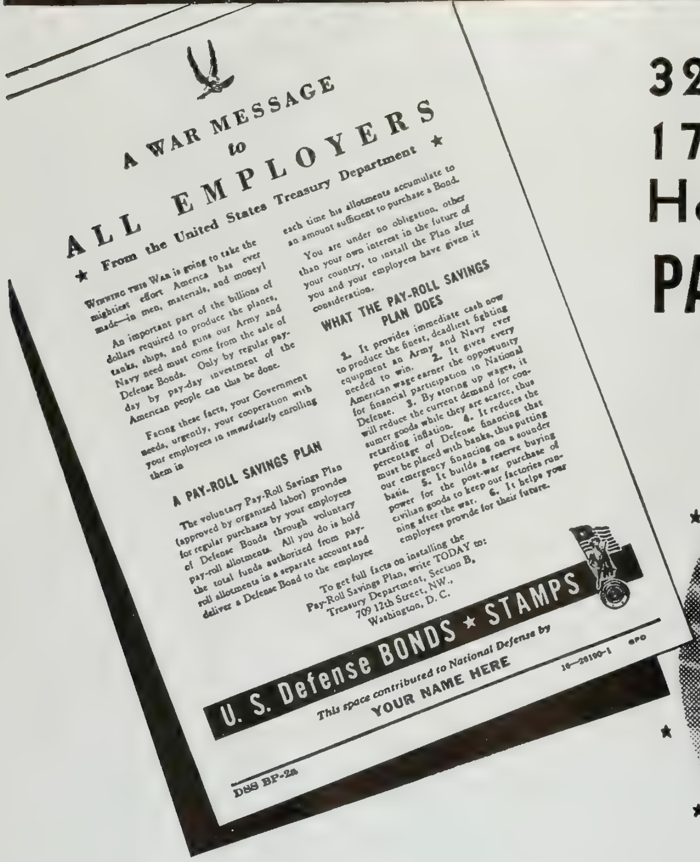

A WAR MESSAGE
to
ALL EMPLOYERS
★ From the United States Treasury Department ★

WINNING THIS WAR is going to take the mightiest effort America has ever made—in men, materials, and money!

An important part of the billions of dollars required to produce the planes, tanks, ships, and guns our Army and Navy need must come from the sale of Defense Bonds. Only by regular pay-day by pay-day investment of the American people can this be done.

Facing these facts, your Government needs, urgently, your cooperation with your employees in *immediately* enrolling them in

A PAY-ROLL SAVINGS PLAN

The voluntary Pay-Roll Savings Plan (approved by organized labor) provides for regular purchases by your employees of Defense Bonds through voluntary pay-roll allotments. All you do is hold the total funds authorized from pay-roll allotments in a separate account and deliver a Defense Bond to the employee each time his allotments accumulate to an amount sufficient to purchase a Bond.

You are under no obligation, other than your own interest in the future of your country, to install the Plan after you and your employees have given it consideration.

WHAT THE PAY-ROLL SAVINGS PLAN DOES

1. It provides immediate cash now to produce the finest, deadliest fighting equipment an Army and Navy ever needed to win. 2. It gives every American wage earner the opportunity for financial participation in National Defense. 3. By storing up wages, it will reduce the current demand for consumer goods while they are scarce, thus retarding inflation. 4. It reduces the percentage of Defense financing that must be placed with banks, thus putting our emergency financing on a sounder basis. 5. It builds a reserve buying power for the post-war purchase of civilian goods to keep our factories running after the war. 6. It helps your employees provide for their future.

To get full facts on installing the Pay-Roll Savings Plan, write TODAY to:
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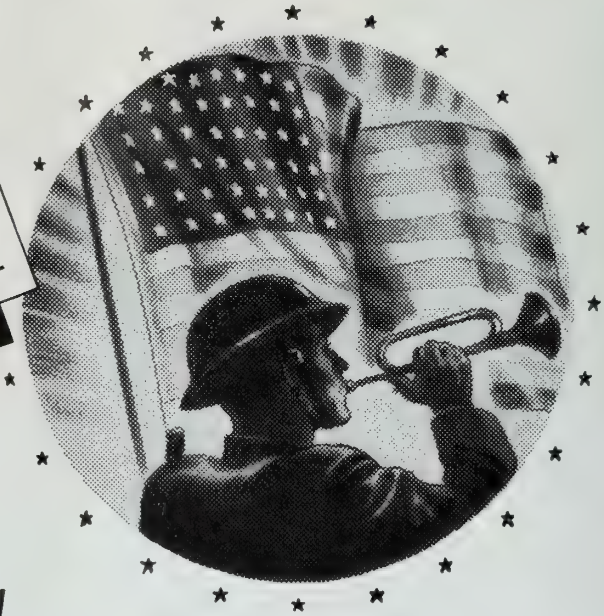

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Do *your* part by installing the Pay-Roll Savings Plan *now*. For truly, in this war, this *people's* war, VICTORY BEGINS AT THE PAY WINDOW.

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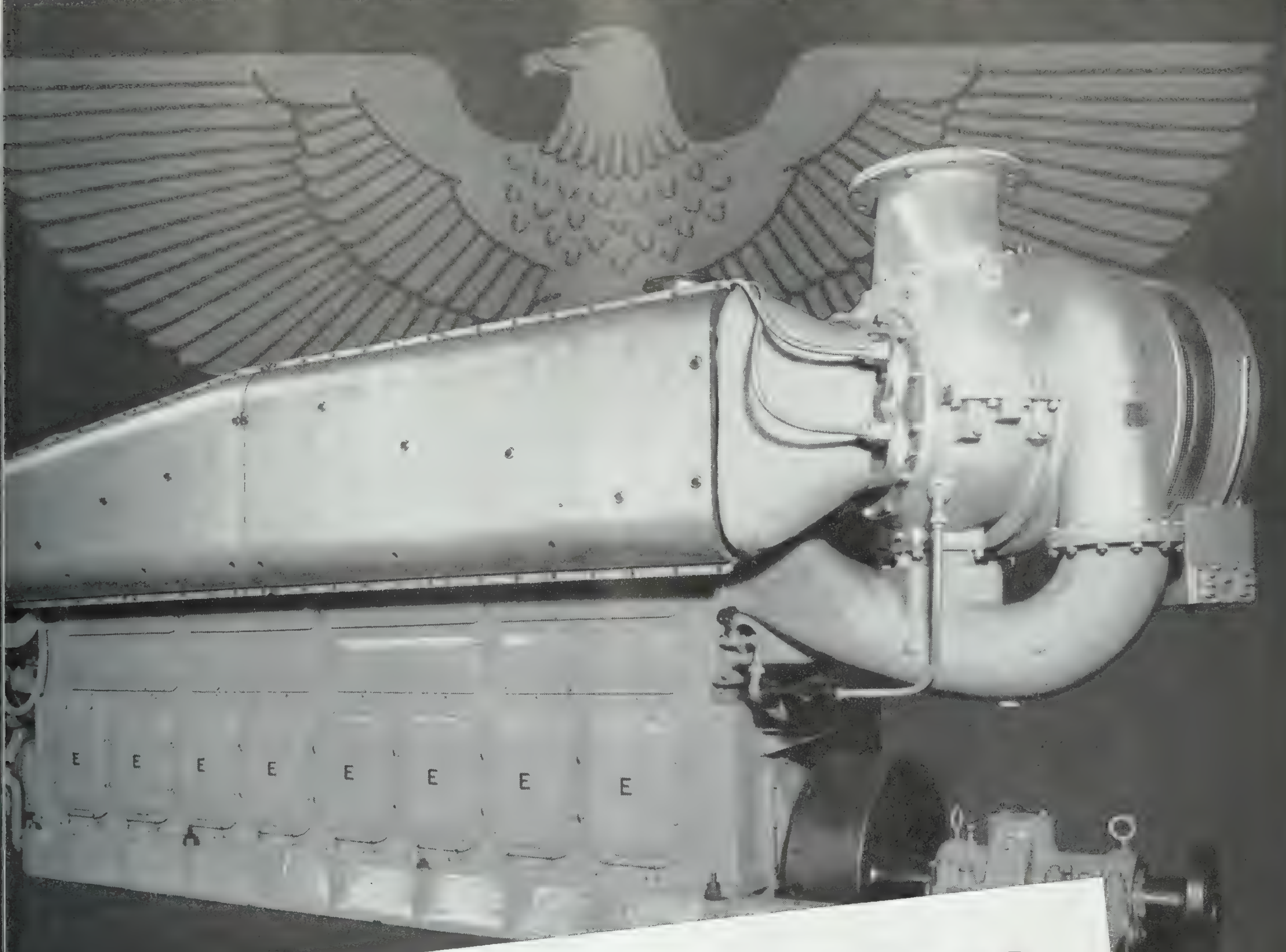
ACTION WITH UNITED NATIONS



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Consulting Engineer Opens Offices

To assist busy top executives in the prompt and practical solution of pressing and vital operating problems, **D. V. Stratton** has opened a consulting management engineering office at 111 Sutter Street, San Francisco.

During the last war, with a background as an industrial engineer in mass production—in both heavy and light munitions industries—Mr. Stratton served two large West Coast steel shipbuilding plants as a consultant.

These plants were going through their early "growing pains" of sudden and large expansion, with a limited supply of experienced mechanics and —more particularly—of supervisors trained in intensive, large-scale plant operations.

Applying, as far as was possible, the principles and methods of mass production organization, control, layout and mechanical methods, he made an important contribution to making these two yards outstanding producers of quality cargo ships. Records for rapid completion — considering the fact that these were riveted ships—compared favorably with the best records of today.

Mr. Stratton was a pioneer in the development of sub-assembly. Bulkheads, deckhouses and other sections —up to the combined carrying capacity of crane and cableways—were built under highly organized shop conditions on the ground. The saving in time, cost and skilled labor contributed much to the unusual records which were made for rapid completions.

DAVID V. STRATTON

Another original feature of Mr. Stratton's work was the establishment of effective predetermined planning and production control. By means of this, the work of each department—and the coordination of all departments—was regulated on a *daily* basis. The result was a smooth and orderly flow of materials *just when needed* through fabricating, assembly and erection operations. Costly delays were eliminated, and contract delivery dates were either kept or anticipated.

Supervisory team-work and effectiveness were materially improved through the closer coordination and more intimate personal contacts that were brought about by strong central planning and production control.

Material handling methods were introduced from other industries. These not only facilitated more speedy production, but substantially reduced the amount of manual labor required. Then—as now—capable labor was extremely difficult to obtain.

Throughout these assignments, Mr. Stratton and his staff assistants demonstrated a happy faculty for winning the whole-hearted cooperation of both mechanics and supervisors.

Because of his conviction that the Pacific Coast will be largely self-sufficient industrially—following the present war-time expansion—Mr. Stratton has opened a consulting management engineering office, at 111 Sutter Street, San Francisco. It will be his purpose—and that of a capable staff—to assist responsible and busy executives in the practical solution of pressing production and control problems in the shipbuilding and other industries.

SIXTEENTH ANNUAL CONVENTION

THE PROPELLER CLUB OF THE UNITED STATES

and

AMERICAN MERCHANT MARINE CONFERENCE

THE WALDORF-ASTORIA – New York City
October 15 and 16, 1942

THE Propeller Club of the United States and the American Merchant Marine Conference will hold their Sixteenth Annual gathering this year in New York — the center of American shipping on the Atlantic Coast.

Subjects of present day interest and of future importance to the entire American Marine Industry, including its contribution to the war effort, will be presented by recognized authorities. Here again is presented the opportunity for the discussion of problems concerning our industry, to promote the spirit of cooperation, advance the American Merchant Marine in all its branches, continue public interest in American water transportation and to further our war effort on the seas.

National Committee meetings will be held on Thursday, October 15th; General Sessions on Friday, October 16th and, in the evening, the American Merchant Marine Conference Banquet.

The need for coordinated and constructive effort was never so necessary as at the present time . . . Your help and participation are needed in this program for furthering the best interests of the American Merchant Marine for our military and economic defense . . . Arrange now to attend the Conference and Convention, and to take part in this most important annual gathering of the American Marine Industry.

R. C. LEE, National President
The Propeller Club of the
United States

J. LEWIS LUCKENBACH, Chairman
American Merchant Marine
Conference Committee

ARTHUR M. TODE, Hon. President
The Propeller Club of the
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For Complete Details and Advance Program, address
National Headquarters, 17 Battery Place, New York

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Lake Carriers Association

E. L. Mathy, vice president of Victor Equipment is making formal presentation of a handsome pen and pencil set to the "millionth visitor" to San Francisco Hospitality House. Left to right: Mrs. L. W. Stettner, wife of president of Victor, Charles V. Parker, radio man, First Class, "Millionth Man".

Victor First Industrial "Hosts" at Hospitality House

The Victor Equipment Company, makers of welders' equipment, joined with the City of San Francisco during August in extending a friendly hand to the millionth service man to be received in San Francisco Hospitality House in the Civic Center.

The millionth man, one of 1700 soldiers, sailors and marines entertained during the day, proved to be a smiling gob, Charles V. Parker, radio man first class, assigned to duty at the nearby Federal Office Building.

Upon entering the entertainment center, Parker found himself surrounded by pretty girls, each urging him with a bewitching smile to try her particular doughnut, sandwich or piece of cake. The girls were stenographers and clerks from Victor's plant on Folsom Street, who as hostesses under the direction of Mrs. L. W. Stettner, wife of the president of Victor, had taken over the club for the day.

They formed the first industrial group to take a much needed day off from their war work to entertain men at the Hospitality House.

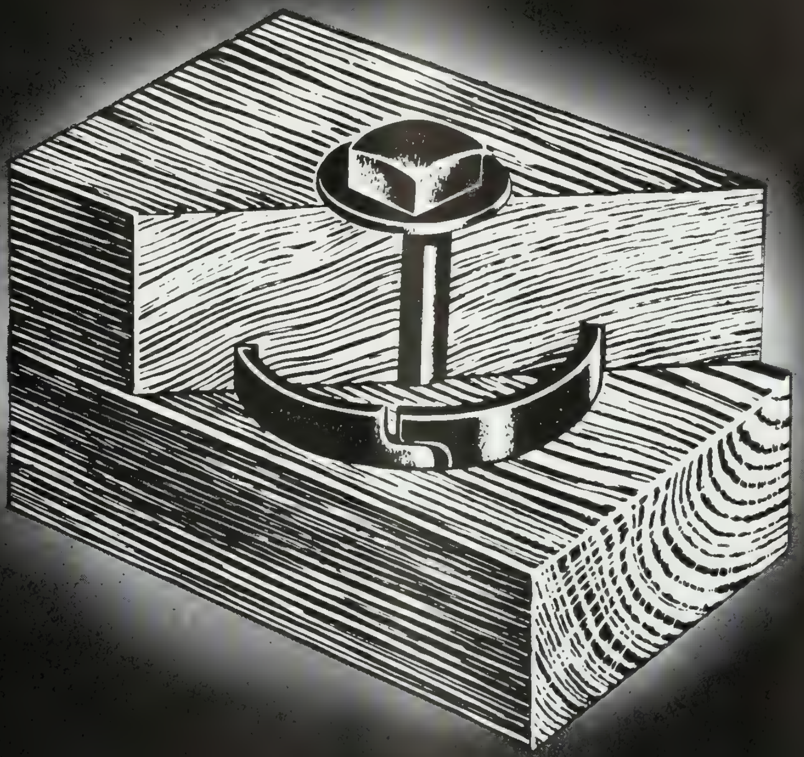
Later the delighted gob was the recipient at formal ceremonies of a pen and pencil set presented to him by E. L. Mathy, vice president of the firm, as a token of esteem. The entertainment included vaudeville, dancing and music. There was dancing until the closing.

Invitations to take over the entertainment of service men at the Hospitality House are being issued by Miss Rose McCook, secretary, to industrial concerns throughout the San Francisco Bay area. If the Victor plan is followed, the girls on staffs of the industrial plants, and the wives of executives, will provide the "eats" and arrange the entertainment and finally dancing for the service men.

The Hospitality House, the first of its kind opened in the United States, has become known to families throughout the Nation by reason of cards and letters mailed from its writing room.

This timber joint

DOES MORE — COSTS LESS



For more than eight years TECO Timber Connector Construction has been tested by the U. S. Forest Products Laboratory and at many leading universities. The TECO Timber Connector brings into play the full stamina of each framing member by spreading the load on a joint more equally over the cross-section of the wood.

TIMBER ENGINEERING COMPANY OF CALIFORNIA
85 Second Street, San Francisco, Cal.
TIMBER ENGINEERING COMPANY Washington, D.C. ★ Portland, Oregon

Sperry To Receive Award

R. E. Gillmor, president of the Sperry Gyroscope Company, Inc., announced during July that all plants of the company would receive one of the first joint Army-Navy Production Awards, and made public the following letter received from the Department of the Navy, Office of the Undersecretary:

"Dear Mr. Gillmor:

"This is to inform you that the Army and Navy are conferring upon the Sperry Gyroscope Company, Incorporated, the Army-Navy Production Award for high achievement in the production of war equipment.

"This award symbolizes your country's appreciation of the achievement of every man and woman in the Sperry Gyroscope Company, Incorporated. Accorded only to those organizations which have shown exceptional performance in fulfilling their tasks, it consists of a flag to be flown above your plant, and a lapel pin which each individual within this plant may wear as a sign of distinguished service to his country.

"I am confident that your outstanding record will bring victory nearer by inspiring others to similar high achievement.

Sincerely yours,
James Forrestal."

"This joint Army-Navy award for high achievement in production is indeed a great honor," Mr. Gillmor said, "and I know I am expressing the sentiment of Sperry's many thousands of men and women when I say that this recognition from our armed forces will be a continuing source of inspiration to us."

Formal presentation of this award will be made as soon as necessary arrangements can be completed.

Mrs. Crowley Passes

San Francisco marine circles were saddened by the passing on August 8 of Louise Crowley, wife of Thomas Crowley, the popular tug and launch owner. Mrs. Crowley had been ill for some time. Besides her husband, she is survived by one son and three daughters.

R. E. GILLMOR,
President,
The Sperry Gyroscope Company.

"E" For Federal Shipyard

Secretary of the Navy Frank Knox made the first presentation in New Jersey of the new Army-Navy "E" Production Award Monday, August 8, to the management and employees of the Federal Shipbuilding & Dry Dock Company, U. S. Steel subsidiary.

Governor Charles Edison of New Jersey, a former Secretary of the Navy, gave a brief address on the significance of the occasion just prior to the presentation.

The pennant, symbolic of the award, was accepted on behalf of the company by L. H. Korndorff, president. Under his direction the Federal Shipyard, which marked its twenty-fifth anniversary last month, set a world's record by launching four destroyers in fifty minutes, later sent three similar ships down the ways in 28 minutes, and has had several twin launchings of that type warships.

Each of the 25,000 employees at the shipyard received one of the new Army-Navy "E" pins. The "E" pin presentation speech was made by Captain James M. Irish, U. S. N., Supervisor of Shipbuilding, New York. His assistant, Commander G. A. Holderness, Jr., U. S. N., Supervisor of Shipbuilding at Kearny and Port Newark, N. J., made a token presentation of the pins which were distributed to all employees by attaching one to the lapel of George R. Hendrickson, a Federal Shipyard worker.

United Seamen's Service

Under the recent authorization, inauguration of the United Seamen's Service providing clubhouses and recreational facilities for American seamen in principal ports of the United States and certain foreign countries has been instituted. **Henry J. Kaiser,** West Coast shipbuilding wizard was named by Admiral Emory O. Land and accepted the chairmanship of the board of trustees of the United Seamen's Service.

Speaking of APARTMENTS...

This is what $185 per month will buy at the Town House in Los Angeles

VALUES IN LIVING THAT CHALLENGE COMPARISON

[1] Spacious living room, luxuriously furnished, with wood-burning fireplace.

[2] Commodious bedroom with twin beds, all percale linens, cedar-lined closets.

[3] All-tile bathroom with vitreous china fixtures; glass-encased tub & shower combinations. The Town House's own specially made bath towels—larger, fluffier, heavier.

[4] Modern and spacious kitchen, with all-electric range and finest kitchenware.

[5] Large dinette with exquisite table linens and appointments; such niceties as Town House's own 18-carat gold-trimmed Craftsman chinaware.

[6] Daily maid service to clean the entire apartment spick & span; valet to take care of any personal needs; night maid to fold back the bed cover and fluff the pillows.

[7] An address convenient to everything in the city; served by fleet busses and street cars half a block away.

[8] All outside exposure . . abundant ventilation . . clean, all-electric heating throughout . . soft, filtered water.

[9] The safety of one of the most soundly constructed buildings in the West; the quiet and serenity that the ultimate in soundproofing affords.

[10] Use of the Town House's new garden swimming pool; putting green; championship tennis court; roof solarium.

[11] The personalized services of a staff of 200 employees, available night and day, and imbued with a desire to serve, that you won't find in any other apartment hotel.

[12] Accessibility to one of the finest restaurants in the West; the *Cape Cod Room* of the Town House. Prices are moderate—*a la carte* or *table d'hote*. Room service, no extra charge, on *a la carte* menus.

[13] The pride, the joy, the luxuriant feeling of residing in what is regarded by many expert decorators as America's most beautifully appointed apartment hotel and Los Angeles' most distinguished address.

¶TOWN HOUSE APARTMENTS, *consisting of Living room, Bedroom, Kitchen, Dinette, & Bath, $185 monthly. Larger apartments also available at proportionately higher rates. Call* NANCY GRAY, *at* EXPOSITION *1234 or drop in any time.*

The Town House

— WILSHIRE CENTER —

Wilshire at Commonwealth . . . Overlooking Lafayette Park

LOS ANGELES, CALIF.

NEW GARDEN SWIMMING POOL COMPLIMENTARY TO TOWN HOUSE GUESTS

Electronic Control of Furnace Atmosphere

To increase production and safeguard quality of steels treated in atmosphere furnaces, a special tube developed by Westinghouse Electronic research engineers provides a continuous check on the purity of the hydrogen gas flowing over the metal. Such scientific control is especially important where the dew point of the treating gas must be maintained in the critical region of —40° C. to —70° C., or for precise furnace conditions such as required for bright annealing, and for chemical processes, using purified dry hydrogen or similar controlled gases.

To give the metal proper characteristics, steel is often heated in an atmosphere of highly purified hydrogen that is practically free of moisture and oxygen. Ordinarily, to measure moisture in the gas where dew points are less than 0° C., a cooled and polished metal plate is inserted in the gas stream and the temperature noted when condensation of moisture first occurs. However, below —40° C. this method becomes largely guess work and even skilled testers disagree on values of the same gas. The electronic method, insures reliable and accurate determination of moisture and oxygen content in hydrogen (or disassociated ammonia) gas.

In operation, the gas flows through a 2-element tube containing a tungsten filament and plate. Electrons flying from the hot filament to the plate continually bombard the gas. If the gas is pure dry hydrogen, all the electrons reach the plate; but any oxygen or water vapor in the gas immediately pick up some of the electrons and form negative ions, thereby reducing the electron current. This change of current in the plate circuit indicates the degree of impurity in the gas.

GOODALL
LIFE SAVING SUITS

"Like a duck in water"

SO SAFE . . . . SO SECURE . . . . SO COMFORTABLE

The Most Advanced Model of Life Saving Suits Available Today . . . Approved by the United States Coast Guard

Incorporates These Features

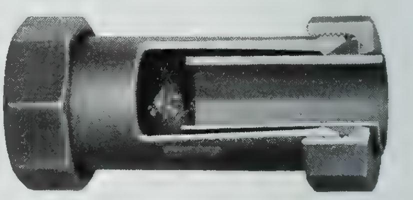
1. Rubber gloves attached
2. Rubber boots attached
3. Quick and easy to pull on over shoes and clothes
4. Special "Rope Pull" closure
5. Rubber-coated on strong fabric
6. Light in weight yet durable

Goodall Rubber Company
Incorporated
Seattle Los Angeles San Francisco
Mills Trenton, N. J.
Established 1873

Quick Pipe Repair For War Damage

Combat "damage control" has long been a part of the technique of battleship operation. The increasing need for merchant ships, as well as warships, to be prepared to make fast emergency repairs has sent marine engineers searching for quick repair methods.

The great success of British engineers in keeping the machinery operating in London during heavy bombing attacks has offered many lessons in this connection especially in the repair of pipe and electrical connections. Every bombing raid results in the breakage of hundreds of water, gas and steam pipes and the immediate reestablishment of these vital services is of paramount importance.



QUICK REPAIR PIPE JOINT

Of immense value has been the widespread adoption of the ordinary sleeve coupling long used by oilfield and utility engineers for the fast joining of pipe without the need for threading and exact cutting to length.

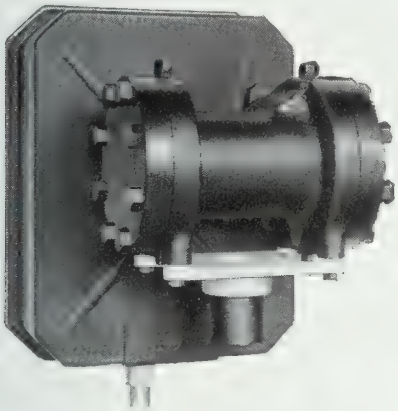
This coupling consists of a metal

sleeve five to ten inches long and large enough so that the ends of a broken pipe can be inserted. Both ends of this sleeve are equipped with a rubber packing and a threaded compression nut, or a flange and bolts which compress the packing tightly around the surface of the pipe. All that is necessary to make the connection is to insert the ends of the pipe and tighten the nuts. The only tools needed are a hacksaw to cut off the mashed or torn ends of the pipe and a wrench to tighten the nuts. Such a connection: can be used for holding reasonably high pressures; is a thoroughly tight, strong joint even for vacuum applications; and is widely used for steam, air, gas, water, or oil. For high pressure steam, asbestos packing is used.

Since the sleeves are usually ten inches long, there is no need for accurate cutting to length, a highly important factor in emergency work.

The great advantage is that the pipe can easily be stabbed into the coupling even under pressure and by sense of feeling when the work must be done in the dark.

The Norton McMurray Mfg. Co. of Chicago are furnishing large quantities of these couplings for emergency repairs.



NEW TAYLOR ANEROID MANOMETER

New Aneroid Manometer

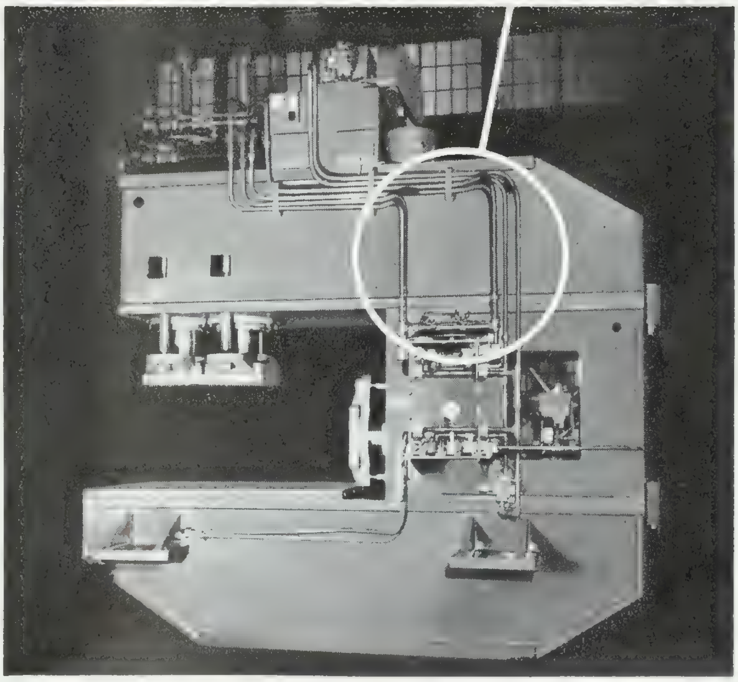
The absence of mercury or other liquid from the new Aneroid Manometer, latest development of the Taylor Instrument Companies, removes the possibility of product contamination and the hazard of mercury being blown due to line surges or carelessness. Further advantages are that sealing liquids are rarely required and vital mercury is released for the war effort.

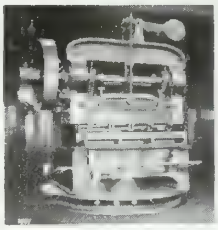
Replacing the stuffing box is a new torque tube assembly which gives a completely closed system and is designed so as to eliminate friction and lubrication. This new assembly also does away with the lost time involved in maintenance. Friction, lost motion and wear are further reduced by the absence of internal pivots and springs.

Metal bellows respond to the pressure variations and insure faster response under ordinary circumstances with immediate reaction to sudden changes in flow. The sturdy bellows are built to withstand high over-range without damage.

Under steady flow conditions, the Taylor Aneroid Manometer is accurate within one per cent of scale range. It is available for all types of indicating and recording meters and controllers and is supplied for standard ranges between 20 and 500 inches of water. The range can be changed right on the job by substituting precalibrated torque tubes.

"ICE WATER In Its VEINS?"





BEATTY HEAVY PLATE SHEARS

Incorporating the latest type pump and valve design, this newly designed **BEATTY** Hydraulic Flanging and Forming Press **eliminates** the need for **cooling coils** . . . and the acute danger that a leak in these cooling coils would allow water to enter the oil supply tank. Available in capacities up to 750-Ton; widely used in the shipbuilding, tank, aircraft, railroad car and other vital **war industries.** If your production calls for punching, coping, shearing, flanging, forming or the like, let a **BEATTY** Engineer help you speed your war work.

BEATTY MACHINE & MFG. COMPANY
HAMMOND, INDIANA

HYDRAULIC DRILL VISE

New Hydraulic Drilvise

Just announced by the Studebaker Machine Company is a new Drilvise for use by tool and die makers, machinists and machine operators; and designed for holding work on the table of all types of drill presses, planers, shapers, milling machines, surface grinders, lathes, cut-off saws and other machines.

Entirely foot controlled and hydraulically operated, this new tool permits the use of both hands in the operation, set-up and removal of work from the machine on which it is mounted. Exceedingly powerful, exerting in excess of 10,000 lbs. per sq. in. pressure between the jaws, this unit is ideally adapted for hundreds of machine shop uses. Though of sufficient weight (74 lbs.), yet not cumbersome, many jobs can be handled without bolting or clamping to the machine table.

Self-sufficient, requiring no outside power or air supply, the unit consists of a conventionally-shaped drill press vise (but without the usual screw or handle), and connected to it by a 6-foot length of flexible rubber tubing is a hydraulic foot-control base. Parts are readily portable and can be easily moved from machine to machine.

Work is placed between the open jaws of the vise, the operator moving the rear jaw toward the stationary front jaw by depressing with one stroke middle pedal of the foot control. This operation, taking only a second, moves the rear jaw against the work exerting only just the right amount of pressure to grip the work. The right or booster pedal moves the jaw a maximum of $\frac{3}{16}''$ for each downward stroke of the foot and exerts a maximum non-slipping pressure of 10,000 lbs. per sq. in. To release work held between the jaws, the left pedal is depressed with one downward movement of the foot. Tightening and releasing operations that formerly took from one to two minutes are done in five to ten seconds. Should it be necessary during a machining operation to re-tighten work in the vise, one downward movement of the foot is all that is necessary to reestablish a 10,000 lb. per sq. in. pressure.

The Studebaker Hydraulic Drilvise is made to following specifications: width of jaws, 6″; depth of throat, 3″; width of jaw opening, 5″. Drilvise measures 30″ long by $8\frac{1}{4}''$ wide by $5\frac{1}{4}''$ high; weight, 74 lbs. Hydraulic foot control measures 11″ high by $10\frac{1}{2}''$ wide by 14″ long, and weighs 36 lbs. Total shipping weight, 120 lbs.

New Type Life-Saving Suit

Greater safety for men who travel the high seas is assured by a new type life-saving suit, now being manufactured by The B. F. Goodrich Company, which has special construction affording improved protection during long exposure.

Large enough to fit a man six and a half feet tall, the garment weighs only a little more than fourteen pounds. Weights built into the soles of the boots provide stability and maintain the wearer in an upright position when the suit is submerged.

The suits are made with yellow hoods, which can easily be seen when afloat. The suits are black, offering minimum attraction for fish, and equipped with knives for protection against shark or other predatory fish. A whistle to attract the attention of passing ships is also a part of the suit equipment, and a waterproof flashlight with a red lens is fastened to the garment for use at night.

These life-saving suits are large enough to cover a fully clothed man and when used with life preserver will keep the wearer afloat almost indefinitely. An ingenious neck band keeps water from entering the suit, while gloves with frictioned material on the palms prevent slipping when handling equipment.

The suit can be put on in a half minute and may be worn on shipboard as protection against wind, cold and spray. The suits have sufficient buoyancy to support another person in the water.

Invisible Rays Light Charts

Complex maps and ocean navigation charts which can be read in total darkness and military control panels lighted by invisible rays are now practical for war use through the development of a new group of ultraviolet black light sources, E. W. Beggs, Westinghouse lighting engineer, reported to members of the American

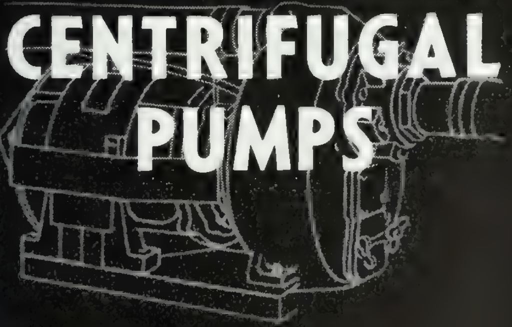
(Page 108, please)

THE GOODRICH LIFE-SAVING SUIT

JAEGER

CAPSTANS

WINCHES, HOISTS



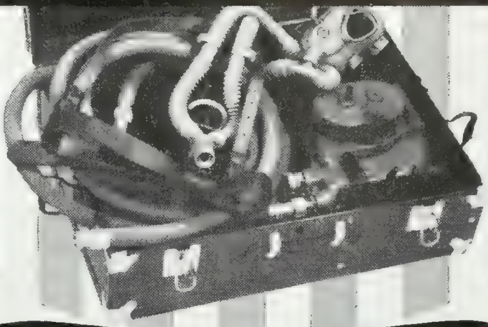
CENTRIFUGAL PUMPS

DECK AUXILIARIES

OUR ENGINEERS ARE AT YOUR SERVICE

THE JAEGER MACHINE COMPANY
907 DUBLIN AVE., COLUMBUS, OHIO
Branches and Service in 100 Principal Cities

HOSE MASK
FOR EMERGENCY REPAIRS



Double Air Tubes For Safety

☆ Where immediate entrance must be made for repairs, inspections, alterations, etc. in tanks, bulkheads and holds, this Davis Emergency Hose Mask is particularly designed for added safety and freedom of movement. Dual inhalation tubes guarantee sufficient air if either should become pinched or fouled. Back fitting is permanently attached to belt to insure positive connection if it should be necessary to use air hose as a lifeline to lift wearer.

Model BLS, illustrated, consists of fibre trunk containing blower, facepiece and either mildew-proofed webbing or leather safety belt. Non-sparking hardware if desired. Approved by the Bureau of Steamboat Inspection and Navigation.

WRITE FOR ILLUSTRATED CATALOG TODAY
The complete Davis Respiratory Protection line is fully described in Catalog 6B. Your copy will be sent promptly on request without obligation.

53 HALLECK STREET, NEWARK, N. J.

Davis Emergency Equipment Co. Inc. Chicago • Newark • Houston
DAVIS PROTECTION
Davis Emergency Equipment Co. Ltd. San Francisco • Los Angeles

Optical Society in Cambridge, Massachusetts.

All of the new fluorescent type of black light devices, ranging from a walnut-sized bulb to a four-foot glass tube, use a newly discovered chemical coating which transforms short ray ultraviolet into near ultraviolet or black light.

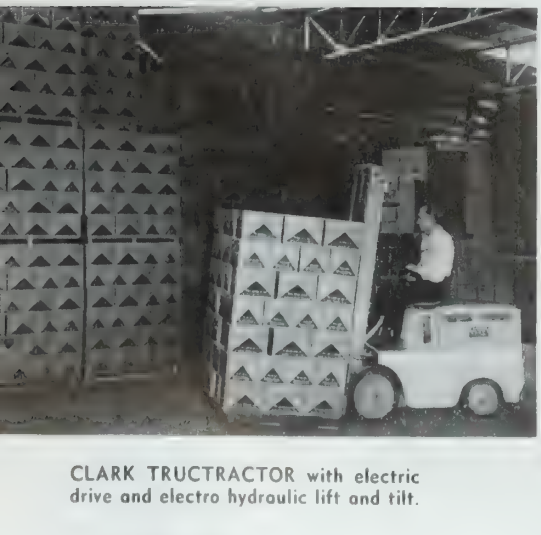
Black light is fast becoming an effective war weapon for the nation's fighting forces. Already it is making it possible for American pilots to illuminate fluorescent glowing instrument dials in the darkness without glare which would impair the pilot's ability to see out into night. Even the feeble glow of the instrument panel can be dimmed or instantly extinguished at the turn of a switch.

Trail-blazing with fluorescent powders or paints is another one of the important new possible uses for black light, the engineer said. By this method, markings left on trees, stones and bushes remain invisible until picked out in the darkness by ultraviolet spotlights.

Maps which must be read under blackout conditions either on land or sea can actually be made to light up in the dark in several different colors for different types of information. Charts coated with phosphorescent chemicals act like storage batteries of light, absorbing a quantity of illumination in less than a minute and then releasing it in the dark over a period of several hours.

Both fluorescent materials, which light up when irradiated by invisible ultraviolet, and phosphorescent coatings will have unlimited applications in civilian as well as military activities. New and efficient black light lamps ranging up to four feet in length and resembling fluorescent lamps in appearance have been developed for practical use by applying a chemical coating to the glass walls of the tube.

Such units are now ready for the production aisles of war plants, the control rooms of power stations and ships and other places where complete blackout might cause dangerous confusion. The black light lamps would light up fluorescent paint on machinery, power switches, doors and stairways and even create paths of soft illumination across the floor. The same effect can be attained without ultraviolet by using regular fluorescent lighting and phosphorescent material, although this illumination is not controllable and is limited to a definite period of time.



CLARK TRUCTRACTOR with electric drive and electro hydraulic lift and tilt.

Electric-Drive Tructractors

With operating schedules speeded up, and with the available supply of man power steadily shrinking, one manufacturer of power trucks has gone all-out in its effort to cooperate with the Government and with the shipping industry in the equipment of shipyards with modern material handling machines and to supply terminals with means to move swiftly and safely the rapidly mounting volume of war cargo.

Clark Tructractor Division of Clark Equipment Co., Battle Creek, Mich., has for more than twenty years built gas-powered vehicles for handling materials, parts and finished products in factories, at railway terminals, and on marine docks. While continuing to supply these gas-powered fork trucks, platform trucks and tractors as before, it is now making its trucks of still greater importance in the war production program by providing them with full electric equipment for storage battery power, where electric operation seems best fitted to the job.

The machines lift from 2000 to 7000 pounds, using a hydraulic vane type pump driven by special series wound motor. The same pump operates the tilting unit which enables the operator to tilt the load back 10° in 5 seconds, for safe riding, and tilt it forward 3° in 1 second for tiering. The machines have four speeds forward and four speeds in reverse, with speeds up to 6 mph under full load, 7.5 mph empty. The trucks will climb 7½% grades under their maximum loads. Drive is on the front wheels, with rear wheel steer. Drive axle is of Clark special double-reduction gear and pinion type mounted on ball and roller bearings. General Electric drive motor is mounted directly to the axle and drives through ring gear and pinion.

MARINE CABLE

FLEXIBLE -

WATER-PROOF -

ACID-RESISTANT

IDEAL for use on ships and docks. The water repellent gaskets between armor and conductors prevent deformation of the armor and prevent creeping and opening up of armor under severe vibration. The bond is so tight that corrosive liquids, gases and moisture cannot seep into junction boxes. The armor is ideal for synthetic and asbestos covered wires. Spiralok conforms to Shipboard Cable Standards and meets requirements of Marine Inspection and Navigation.

Spiralok

Look for "Spiralok" stamped on the armor

●

Write for quotations for either bronze or steel armor Spiralok.

AMERICAN METAL MOULDING COMPANY

146 COIT ST. IRVINGTON, N. J.

VACO
PACIFIC COAST
REPRESENTATIVES

Suits in stock for prompt delivery. Order now.

Atlas Marine Supply Company
264 West Seventh Street
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Tel: San Pedro 2484

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Portland, Oregon
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also Astoria, Oregon

Pacific Marine Supply Company
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Seattle, Washington
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U.S. Patents applied for.

PROTECT YOUR CREWS
WITH THE VACO LIFE SUIT

The seamen who make up your crews are indispensable to our war effort—they deserve the best equipment you can give them.

When a torpedo or mine hits, seconds can spell life or death. A seaman's life may depend on his life suit.

The Vaco Life Suit gives the utmost in protection. It has met the severest tests for about three years under war conditions.

More than 40,000 VACO Suits in use today

Vaco is fool-proof with nothing to rust, foul or freeze when every second of time counts. The Vaco suit can be moved around with ease—always ready at a moment's notice—can be worn at work or while sleeping if necessary. Leaves hands free for quick action.

Officially approved by the
Bureau of Marine Inspection & Navigation, U. S. Coast Guard

VACO, INC.
15 Moore Street, New York

Radio Receiver Will Cut Shipping Losses!

The elimination of one direct cause of American ship losses was made possible recently by the introduction of a new low-radiation radio receiver by the E. H. Scott Radio Laboratories, Inc., Chicago, Illinois. Unlike ordinary radios (large or small), this specially designed set gives off no signal detectable by enemy direction finders, and it thus foils subs and ships which have heretofore been able to track down our boats from distances of 100 miles or more away simply by listening to the constant oscillator radiations sent out by the entertainment radios aboard them.

Radio engineers have long known that the oscillator tube in modern radios is actually a low-powered transmitter that broadcasts all the time the set is in operation. The Federal Communications Commission knew this and absolutely banned the use of radios for entertainment at the outbreak of the war on all ships of 1600 tons or over. Unfortunately, however, many officers and men, hungry for news on long voyages and attributing the ban to Government red tape, smuggled radios aboard ships. Every one of these sets that was operated was just as dangerous as a searchlight operated in a blackout. It gave away the ship's position just as clearly; it courted death for every man aboard, and destruction to thousands of tons of vital materials.

The new Scott Marine Model SLR-12-A eliminates this danger to shipping by cutting oscillator radiation to the point of absolute safety. It has full approval from the FCC for use at sea on both broadcast and shortwave bands, assuring for the first time excellent performance at greatest distances from land under difficult shipboard conditions.

Many shipping authorities are convinced that this low-radiation receiver offers the solution to a number of today's tough shipping problems, not only because it is safe and protects men, ships and materials, but because it lessens hiring difficulties and greatly boosts shipboard morale. For full details about this marine receiver, write to E. H. Scott Radio Laboratories, Inc., 4450 Ravenswood Avenue, Chicago, Illinois.

Elastic Stop Nut Wall Chart

A wall chart, explaining the uses of its various types of self-locking nuts, is being distributed by Elastic Stop Nut Corporation, Union, New Jersey, to engineering departments, drafting rooms, maintenance shops and schools.

The center of the chart is devoted to an illustrated description of the basic principle by which a self-locking action is obtained in all Elastic Stop Nuts, regardless of type. This is followed by illustrations of some of the advantages to be obtained by the use of the nuts, and, completing the presentation, there are cross-section drawings showing the method of application of the nine types most generally used, with corresponding photographs of these types.

The chart measures 21 by 27 inches, and is reinforced at top and bottom by metal stripes, with an eyelet for hanging. Copies can be obtained by writing to the manufacturer.

Increase Production . . Control Costs

Through

Balanced Line and Staff Organization
Stronger Central Planning Control
Progressive Equipment Layout
Labor Saving Material Handling Methods
Improved Servicing of Direct Labor
Supervisory Stimulation Through Incentives
Subdivision and Standardization of Operations
Well Planned Utilization of Female Labor
Gain-Sharing Bonus Plans for Labor

D. V. STRATTON & COMPANY
Management Engineers
111 SUTTER STREET
SAN FRANCISCO

Shipbuilding Records

(Continued from page 50)

fiance was one of four vessels launched for the Emergency Fleet Corporation at the Alameda plant of the Union Iron Works on July 4.

"The District Officer's report shows that the keel of this boat was laid on May 19. From that date to July 4 there were six Sundays and two legal holidays, Memorial Day and the Fourth of July. Thus there were eight days in which no work was done on the *Defiance,* and this reduces the actual working time to 38 days from keel laying.

"It will be noted in this chart that the Eastern and Great Lakes yards are in the lead in point of fast shipbuilding. The American Ship Building Company's Cleveland plant holds fifth and sixth places with the *Lake Gedney* and the *Lake Duncan,* built in 61 and 65 days, respectively, and the same company's plant at Superior, Wis., is in seventh place with the *Lake Aurice,* built in approximately 66 days. Then comes the Bethlehem Union Plant again with the *Victorious,* built in about the same number of days.

"The Skinner & Eddy Corporation holds ninth, tenth, eleventh and twelfth places, with four 8800-ton vessels.

"In interpreting this chart it should be borne in mind that the records are based entirely upon the count of calendar days. This explains the discrepancy between the chart as printed herewith and the previous reports of record-breaking performances from the shipyards, which had to do only with actual working days on hulls.

"A slight study of this table however will convince anyone that it is a very poor basis on which to study shipyard output. We have prepared a second table, for instance, which is reproduced herewith which takes the twenty-five record launchings and arranges them on a ton per calendar day basis which results in some remarkable changes in the order of production, such as number one becoming number three, and number four becoming number one, while even more startling, number two becomes number fourteen, and number twenty-five becomes number eight.

"On the original list of twenty-five of the country's most rapid launchings, the Pacific Coast yards occupied eleven places as follows: fourth, eighth, ninth, eleventh, twelfth, fifteenth, seventeenth, twenty-first, twenty-third and twenty-fifth. Figuring these same launchings on the basis of ton per calendar day (the original table published in the *Emergency Fleet News* taking no account of the size of the vessels), we find that the Pacific Coast places in the record would be as follows: first, second, fourth, fifth, seventh, eighth, ninth, eleventh, twelfth and thirteenth.

"It must always be borne in mind, however, in comparing time elapsed between the keel laying and launching of any vessel that the data have a very limited usefulness in determining the speed with which shipbuilding operations are going on in any particular yard.

"There are many factors which might make for the speedy launching of a certain vessel; she might be rushed ahead while the vessels alongside of her lagged behind; the ways on which she was built might have been occupied for an unduly long time by the vessel immediately preceding her, with the result that a great deal of material might have been fabricated for her hull long before her keel was laid; and then again there is a wide range in the percentage of completion at which a vessel is launched.

"For these and many other reasons, the splendid launching records made by so many of our American shipyards, while worthy of the highest praise as individual feats of industry and organization, have very little use as a basis on which to form opinions as to

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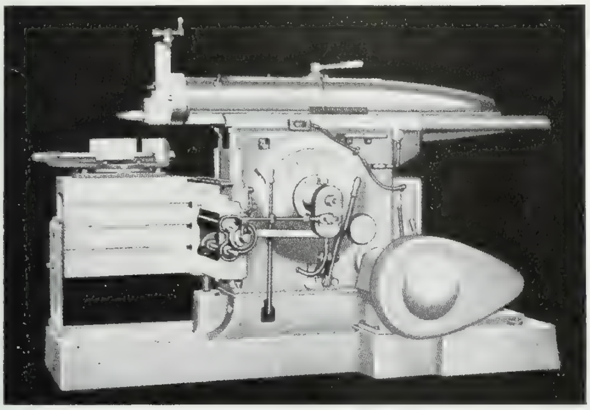

Steptoe 24" Heavy Duty Back Geared V-Type Ram Timken Roller Bearing Equipped Shaper. Arranged for V-Belt Motor Drive through Four Change Timken Bearing and Twin Disc Clutch Equipped Speed Box. Note centralization of controls for efficiency and high production.

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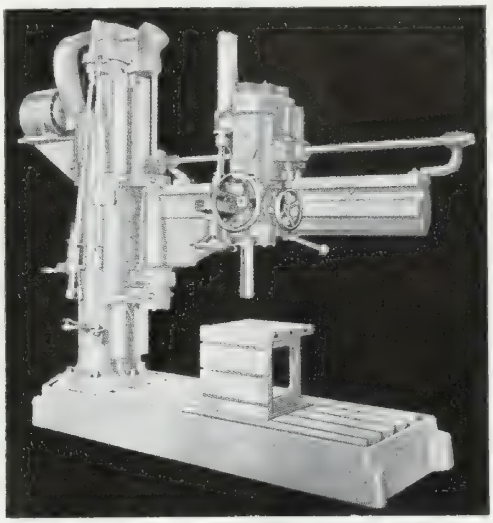

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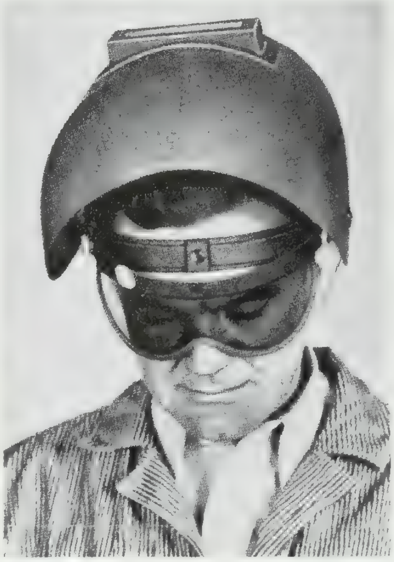
the relative speed of our different shipbuilding establishments.

"Perhaps the most satisfying comparison could be arrived at by using as a basis the deadweight tonnage actually delivered per set of ways per year."

Single Control Welders For Shipyards

P&H-Hansen WA-200 Square Frame Welders, featuring single control current selection for any welding requirements, and easy stacking with a quick parallel hook-up for peak loads, are doing their share to help boost the nation's merchant fleet production. The capacities of these P&H units are from 30 to 450 amperes, and their operating features are exclusive. Recent deliveries of the WA-200 welders to shipyards from the Harnischfeger plant at Milwaukee run into the hundreds. The photo shows a shipment of 40 machines for a large West Coast yard. These machines are stacked in units of four, in the new P&H welder cradles, which provide convenient transfer of welding service to any point of yard or ship.

A SHIPMENT of 40 P. & H. frame welders for a West Coast shipyard.



EYE SHIELD FOR WELDERS

Welder's Eye Shield

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(Page 126, please)

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Chief Engineer: C. W. Johnson.
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Vice President: E. C. Smith.
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Vice President: Walter Fawcett
Manager: A. G. Streblow
Naval Architect: D. McCall
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Purchasing Agent: J. F. Godley

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Manager: Fred McLean.
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Hull Superintendent: M. Madruga.

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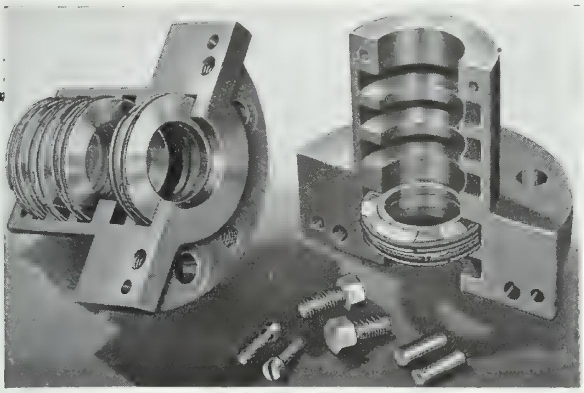

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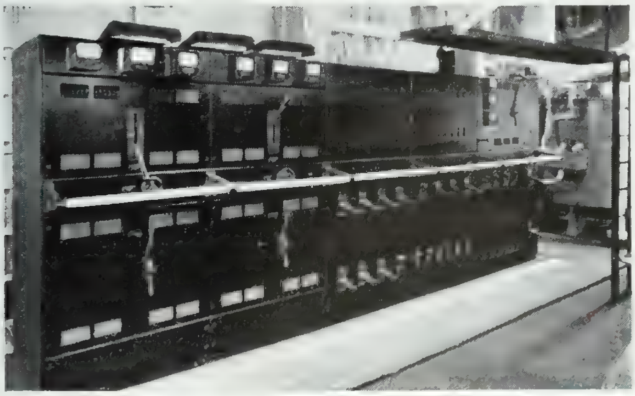

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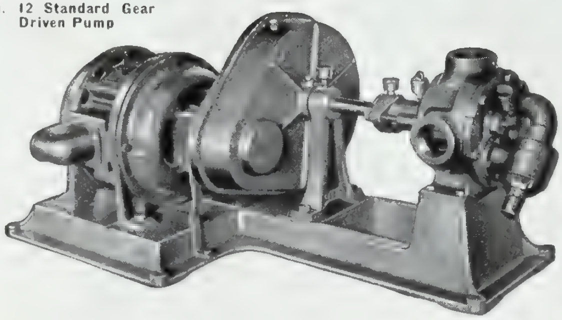

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Applications will be accepted by the Civil Service Commission in Washington, D. C., until the needs of the service have been met.

Examination announcements and application forms may be obtained at any first- or second-class postoffice.

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The Catalogs of Today Become the Technical Handbooks of Tomorrow

Beryllium Copper Terminal Fittings, a new folder (Form 10M 5-42) just issued by Littelfuse, Inc., of Chicago, Ill., and El Monte, Calif., and describing the Littelfuse clips and screw terminals made from a new Beryllium copper alloy.

This folder is a compendium for technical as well as general information, compiled from records by designers and engineers of Littelfuse Incorporated.

With the new Beryllium copper alloy, and the service these Littelfuse clips are giving in aircraft, auto, radio, ordnance, marine applications, communications and other instrument uses of extraordinary stress, this compilation is important and timely. It is the first detailed treatment of this subject that has appeared.

Care of Rubber Products, seventh in the series of vest-pocket size pamphlets telling how to care for and conserve industrial rubber products, so vital now because of the war, has been issued by The B. F. Goodrich Company, and is now available upon request. The newest pamphlet deals with gloves.

Under the general title "How to Get the Most Out of Industrial Rubber Products," the previous six pamphlets, which are still available to those who wish them, had as their subjects the following: "Transmission Belting," "Conveyor Belts," "V-Belt Drives," "Belt Salvage," "Rubber Hose," and "Mats and Matting."

The new pamphlet describes how to get the most service from electrician's, acid and other industrial type rubber gloves.

Vulcalock Products, a new catalog section on its Vulcalock Rubber Linings for handling corrosives and abrasives has been published by The B. F. Goodrich Company, Akron, Ohio, and is now available upon request.

Satisfactory rubber linings have been developed for handling most inorganic acids except strong oxidizing agents, such as nitric, chromic and concentrated sulphuric, as well as for most inorganic salts and alkalies, and many organic chemicals now in commerce.

One of the most valuable features is a table listing over 100 of the most common services for which Vulcalock Rubber Linings are suitable and giving the limits of temperature and concentration of the fluid in each case.

Electric Kitchen Economy. Cooperating with the Government in avoiding needless waste of electric energy, and with users of commercial electric cooking equipment in prolonging the life of such appliances, Hotpoint has just released a comprehensive book of service and instructions entitled "How to Make the Most of Your Hotpoint-Edison Electric Kitchen."

This book clearly and plainly explains to the commercial chef:

How to conserve electric energy without sacrificing speed.

How to get the most efficient use out of each piece of equipment—current models and "vintage numbers."

How "Maximum demand" charges may be kept at a minimum with no sacrifice of utility.

How to set switch positions and control temperatures for the best results in food preparation.

How to schedule cooking operations for greatest efficiency.

In helping users to prolong the life of present equipment and to make such use of it as to obviate the necessity of purchasing new equipment until production has "returned to normalcy," Hotpoint feels it is making a direct contribution to the "Victory" effort.

Quantities of the new book are available to utilities at the cost of production—five cents each.

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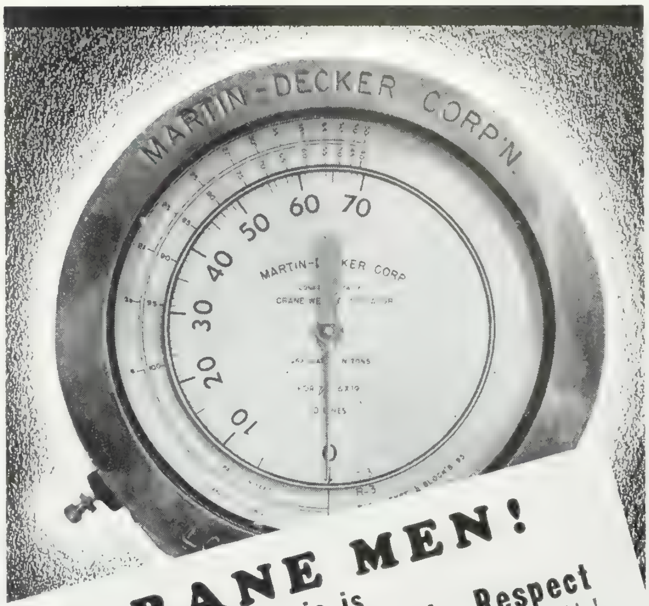

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Horizontal Single-Acting Piston Pumps, four-page, two-color brochure, publication W-111-B31 of the Worthington Pump and Machinery Corporation, describing and giving complete specifications for the single-action direct steam-drive pump that for many years has been the standard boiler feed pump for marine use on steam jobs carrying pressures up to 250 psi. This pump is also recommended for general services on shipboard and ashore.

"Catterpillar" Diesels Go To War! —that's the inspiring title of a new black and white booklet just off the press.

Both combat and non-combat use of "Caterpillar" products are described and pictured in this publication issued by the Caterpillar Tractor Co., Peoria, Illinois.

TCM is a twelve-page booklet describing the new Jessop TCM high speed steel and just published by Jessop Steel Co., Washington, Pa.

Information regarding its advantages and performance as compared to 18-4-1, also its analysis, typical applications and heat treating procedure, are covered in detail.

Copies of this new booklet on TCM molybdenum-tungsten high speed steel will be sent without obligation, upon request.

Make 3 Do the Work of 4, a new 14-page "fight waste" bulletin, has just been issued by Air Reduction Sales Co., 60 East 42nd Street, New York, N. Y. This booklet, which consists of a series of shop posters, is designed to help arc welding operators do more useful work with every electrode. Each poster—there are six in all—illustrates a common wasteful practice, then shows the corresponding good practice and points out the ease and simplicity of doing the job the right way. Posters are bound securely into the booklet—yet are perforated and can be easily detached and tacked on shop bulletin boards.

Copies of this really helpful booklet may be had without obligation. Requests should be sent to the nearest Airco office or to the company's home office in New York.

Industrial Circuit Control Switches, a new four-page bulletin illustrating and describing improved G-E circuit control switches for industrial applications, has been announced by the accessory equipment section of General Electric Company's appliance and merchandise department at Bridgeport, Connecticut. Switches shown in the bulletin are for use in signaling equipment, communication apparatus, instrument panel boards, utility lighting systems, specialized lighting equipment, aircraft circuit control systems, etc. The bulletin shows 26 toggle and push button switches. Toggle switches include single pole, double pole, three-way (single pole-double throw), double pole-double throw, two-line-two-circuit, and three point. Many of the switches are made to Navy specifications.

Wiring diagrams of all switches, and specifications of assembly parts are given. Copies of the bulletin are available on request from your nearest General Electric distributor.

Marine Drainage, catalog No. 42 of the J. A. Zurn Mfg. Co., Erie, Pa., describes the marine drainage products of that firm. These products represent 40 years of development work carried on in conjunction with many of the leading marine engineers.

The information is complete on each item, and the cross reference and index system used makes this book a very practical help to the marine engineer in making out specifications for new or old work.

Concealment Coatings, a brochure, published by Devoe and Reynolds Company, Inc., points out the art of camouflage is an involved and constantly changing technique and refers to official sources for detailed directions.

The Devoe concealment coatings which meet or exceed Army specifications, and which match the nine official colors established by the U. S. Corps of Army Engineers, Specifications T-1213, include: light green, dark green, sand, field drab, earth brown, earth yellow, loam, earth red, olive drab.

A section of the folder is devoted to shatterproof coating, which eliminates danger from flying glass in event of a bombing raid.

Interesting details on fire retarding paint for use on all interior surfaces likely to be damaged by fire from incendiary bombs are contained in another section of the study.

All-Bearing Service, 330 supplement to No. 5 manual of Precision Bearings, Inc., Los Angeles, Calif., a 30-page loose-leaf catalog section listing the ball and roller bearing requirements of all principal American makes of 1940-42 passenger car and truck models.

The Nalco System, a four-page two-color brochure, published by the National Aluminate Corporation of Chicago, Ill., describes in text and pictures that firm's system of boiler feed water treatment as applied on shipboard.

◆

VISOR FOR WELDERS

(Continued from page 111)

during operations other than welding. It tends to eliminate reflected glare, affords wide vision, protects the eyes from flying scale from chipping hammer or wire brush. Loading of welding holder, set-up work, and other details may be accomplished without raising the visor. The shade is light green; fits the face comfortably; may be worn over prescription glasses. At ease, the welder can raise the protective visor—a quick flip downward and it resumes its protective position. It is made by Jackson Products, Detroit, Michigan.

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Pacific
MARINE
REVIEW

October, 1942

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Official Organ

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Shipowners Association of the Pacific Coast

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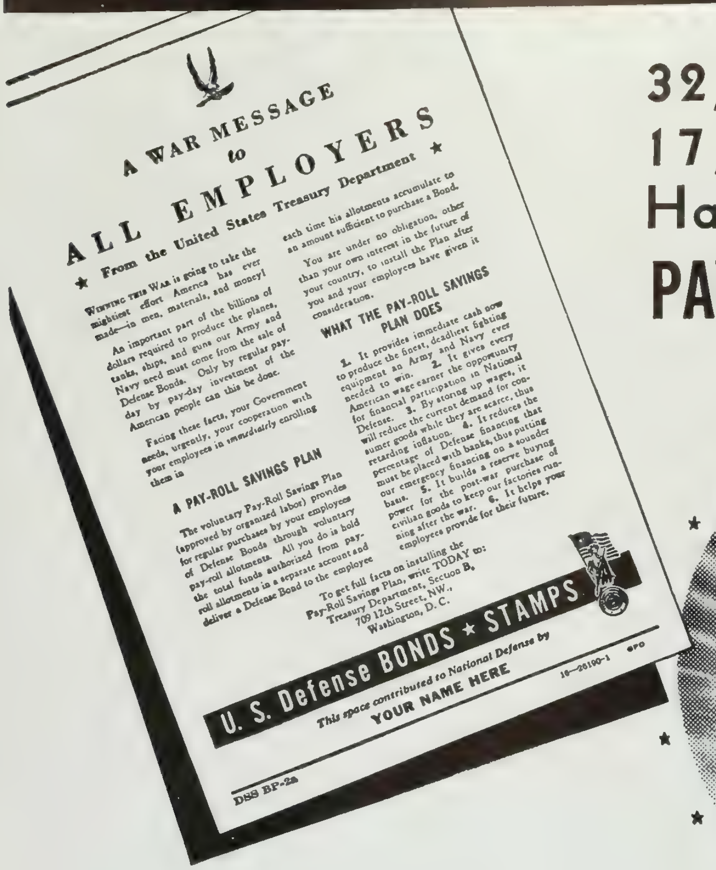

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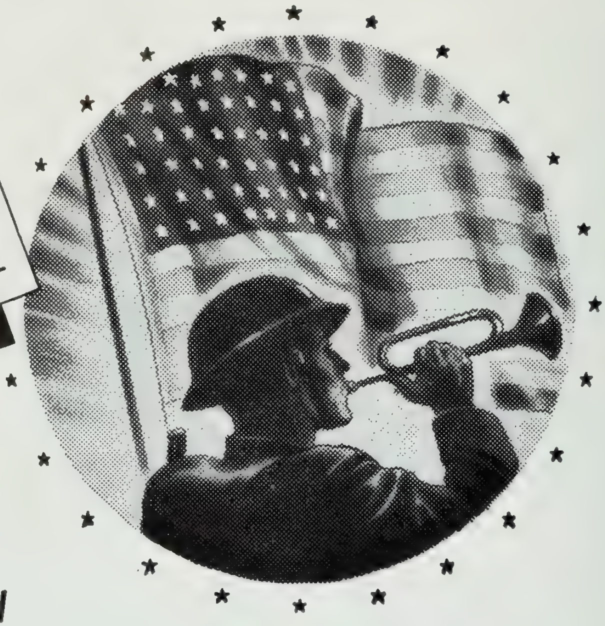

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Pacific
MARINE
REVIEW

A Salute to the Victory Fleet

by J. LOUIS LUCKENBACH
President, American Bureau of Shipping

THE UNITED NATIONS are today paying tribute to the Victory Fleet on the anniversary of the first Liberty ship launching at Baltimore, Maryland, one year ago. It is a salute to the builders of ships and the men who sail them, which combination keeps open the lifelines of supply to the battlefronts across worldwide sea lanes.

The sudden demand placed upon the American shipbuilder supplied the impetus necessary to meet the problem with which we were confronted. Almost instantly this nation, which had trailed the world in shipbuilding excepting in instances of emergency, became the greatest builder of ships in history. Shipbuilding, which at best was spasmodic and a very minor industry, answered the demand put upon it and this has enabled the American Merchant Marine to become a potential force against the aggression of others.

The launching of the *Patrick Henry* a year ago gave notice to the Axis that American shipbuilding was to hit its stride. New methods such as welding, prefabrication of large units, etc., stepped up production and, with the aid of duplication, mass production has been achieved. Thirteen other Liberty ships followed the *Patrick Henry* down the ways that day—built by a nation which had turned out but a handful of ships in the 15 years before the Maritime Commission was created to rehabilitate the American Merchant Marine.

An unprecedented number of ships have been delivered into service in a year of remarkable accomplishment and the pace, while excellent, gets better from day to day. Statistics show a continued downward trend in the number of days from keel laying to delivery in every yard.

The building of such ships used to take many months on the ways and additional months at fitting out docks. The first Liberty ships built by new yards required an average of 241.3 days from keel laying to delivery. Within six months the time had been cut more than half, to 108.4 days. Another month saw it drop to 83.3 days. The record in regular order of production so far is 46 days. How low it will go, no one can predict.

A Liberty ship has actually been delivered into service 29 days after keel laying, but not on scheduled production.

Nearly 2,000,000 men and women are participating in this program. They are at work in more than 60 shipyards on the Atlantic, Pacific, and Gulf Coasts and the Great Lakes, and in more than 800 industrial plants scattered through 36 states which are contributing materials and equipment to the shipways. Typical American ingenuity and enterprise have made this possible. The Merchant Marine Act of 1936 contemplated the building of 500 vessels in 10 years to replace worn and obsolete vessels then in service. The emergency war program, which started in February, 1941, called for more than four times that number in two years.

The greatest problem at first was not lack of materials, but lack of sufficient shipyards and "shipbuilding brains" to create this gigantic industry. It should be stressed very strongly that the reason America was in an unfortunate situation so far as shipbuilding was concerned was that the American Merchant Marine was looked upon as a war phenomenon. Unless the abolition of war becomes a certainty, it would seem logical that American shipbuilding facilities should be kept ready for action, and the way to do that is to see that sufficient ships are built from year to year in order that the life of the yards may be assured. These views are not based on narrow economic nationalism but on the fact that the onset of war has ever found America with insufficient shipping. Our enemies have counted on this in the past; they must not be allowed to count on it again.

One of the first steps to meet this problem was to establish additional shipyards and the Maritime Commission has thus far authorized 20. These new yards have added 165 ways to American shipbuilding capacity. These, with 45 ways added to other existing yards, make a total of 210 additional ways for large ocean-going merchant ships, financed by the Maritime Commission, besides those added by shipyards through private capital.

Some of the companies which undertook Maritime Commission contracts were new to the shipbuilding business. But they learned, and introduced many new methods, some of their own devising. Thousands of workers who had never been inside a shipyard in their lives took hold and swung into action in the same spirit. Likewise, industrial concerns all over the country reorganized and retooled their plants and began building equipment for ships, many putting out products new to them but with the will to meet the war effort.

The men of the merchant marine were also standing ready to man these new ships and sail them. Some 60,000 officers and seamen are in service today — in war service keeping the American expeditionary forces and United Nations' armies supplied with armaments, munitions, food, medical supplies and every other item needed to keep them fighting.

These merchant seamen wear no uniforms and belong to no military or naval organization. They are civilians—a section of American labor doing its job to win the war. No other group had done more to help win the war. No other group has seen more action or faced more constant danger than the merchant seamen who man our ships through submarine- and mine-infested waters. Many with unflinching courage and devotion to their country have suffered the hardships of hell and have made the supreme sacrifice.

Ship losses in the last few months have been on the decline due to better convoy methods, increased patrol, and the heavy toll taken of Axis submarines. The menace from the air should be decreased with the upbuilding of our air force. However, it would be dangerous to minimize the extreme seriousness of the hazards that remain.

The United Nations salute the Victory Fleet at a time when thousands of officers and men are needed by the American Merchant Marine as never before. The War Shipping Administration reports that approximately 100,000 more will be needed by the end of 1943 to man the vessels of the fast-building merchant fleet.

This means that the Government must call upon all men with sea experience to get back into merchant marine service. Thousands of such men are living in all parts of the country, working at all sorts of jobs. The WSA urges that such men can make their greatest contribution to the war effort by manning ships of the Victory Fleet.

World War I showed this country the necessity of a self-owned, adequate merchant marine. We forget easily, but this time we were not caught as completely in the doldrums as in 1917. Lessons are not easily learned; school of experience is frequently a bitter school; let us not forget that in addition to an adequate Army and Navy, we must have a well-manned, up-to-date, and speedy merchant fleet plying trade routes so that it may ever be ready to serve and support these branches of our service. To neglect the merchant marine in times of peace is to invite disaster in times of war.

We do not want war—we hate it—but when we are forced to fight, let us make our winning less difficult. If we pursue this policy, the danger of our being again drawn into conflict will be much lessened. It will incur expenses which some economists will say are unwarranted, but we all pay for insurance, and insurance such as this will bring more happiness and more security to the world than anything else we can do.

A Prayer for Ships, Shipbuilders, and Seamen

Churches of all denominations throughout the United States joined in paying tribute to the Victory Fleet on September 27 when the nation saluted the men who build and sail our ships.

At the request of the Federal Council of Churches of Christ in America, the Reverend George Stewart of Stamford, Connecticut, executive secretary of the Commission on Worship, prepared the following prayer which was offered during services of member churches.

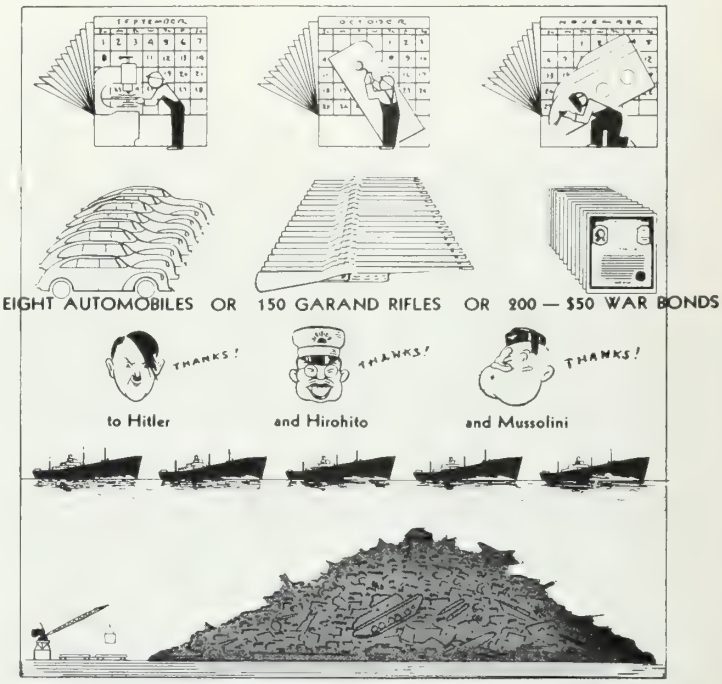
"Lord, Thou who hast ever blest those who go down to the sea in ships to do business upon great waters, brave men who see the work of the Lord and His wonders in the deep, lend now

This Cartoon of the Month . . .

is reproduced from Bo's'n's Whistle, house organ of the Oregon Shipbuilding Corp., Portland, Oregon.

HERE'S WHAT THE 971 JOE LAYOFFS* LOOK LIKE IN FIGURES

1. It would take 1 man nearly three years to do the work that is lost in one day.
2. Every day the Joe Layoffs lose $7,768 in wages—enough to buy:
3. DONATING IN ONE YEAR 2,835,320 wasted hours.
4. ENOUGH TO BUILD 5 LIBERTY SHIPS
5. That together can carry in one load 40,000 tons of guns—and food—and planes—and tanks to our boys in the front lines.



ARE YOU A JOE LAYOFF?

★ ABSENTEES ON AN AVERAGE DAY O. S. C. and Kaiser Co., Portland and Vancouver.

Thy strength to those who build and to those who sail the ships we offer to the service of mankind.

"To all who make the plans, drive the rivets, weld the plates, fit the engines, rig the boats, grant skill above their customs and purpose which quickens hand and foot.

"For those who make imperiled journeys in these stout ships, their brothers placed within their keeping, give intrepid hearts in storm or calm, in pleasant days and nights, in the thunder of battle, in lifeboats adrift on alien seas, in extremities of hunger, pain or thirst, into whatsoever hardships or happiness their service carries them.

"To all of us grant a saving sense of mission and urgency and lend us, we beseech Thee, Oh Lord, the will to make and to keep a just and lasting peace through Jesus Christ, our Lord. Amen."

A Noble Tribute to the Flag

AT THE PRESENTATION of the Minute Man Flag at the Wood Works, Carnegie-Illinois Steel Corpn., McKeesport, Pa., July 14, Fred Markus, roller helper, who accepted the emblem for his fellow employees, made the following remarks:

"I am indeed proud of the honor of receiving this emblem of a duty well performed in behalf of my fellow employees. Let us keep in mind the heroes of our country that this represents.

"Some time ago we were honored by receiving a similar emblem, the Navy 'E' Flag. Let us be mindful of the duties they represent, and be loyal to the flag of the United States. Our country's flag is not a mere piece of silk or wool; it is a living thing pulsing with the throbbing ardors of humanity, glowing with fervor of immortal hopes.

"It is an altar fragrant with sacrifice. It is a garden, wherefrom a nation grew, watered by the pure blood of heroes. It is a battlefield whereon it strikes its blow for the cause of freedom.

"It is a flame springing up to consume injustice and wither the hopes of wrong.

"He who looks upon that flag beholds within its folds the valor and faith of Lexington and Gettysburg; the blazing eye of the embattled farmer at Concord bridge; the splendors of the ocean that was the cradle of John Paul Jones; the prayer of Washington at Valley Forge; the agony of Lincoln, as he paced the midnight hours; and the wind-swept faces of the boys who died but yesterday along the thundersmitten hills of France.

"If ever our flag needed loyal men and women, it is today. For such a flag, true men and women will gladly die; for such a flag, true men and women will always nobly live."

Ship Repair

. . . A Vital War Effort

Reviving Damaged Cargo Carriers As Important As Building New Vessels

SHIP REPAIR IS a vital contribution to the war effort. It is an intricate, fascinating and one of the most important industries both in peace and war. Not only does it involve the skill of the artisan but the imagination and ability of the executies of the organization who must determine whether a job can be done, how it can and shall be done, and whether it is worth doing. Frequently these decisions must be made miles and miles from the spot where the actual work has to be done.

A ship that is not in service is not a ship at all; to all intents and purposes it is just so much useless steel and machinery. Every time a ship leaves a repair plant it is the equivalent of a new vessel from a service standpoint. It is again a working transportation unit ready to take men and supplies to any of the far corners of the earth where they are needed.

Ship repair may also be classified as one of the most exacting of skills practiced by man. It is different from shipbuilding because, when a ship is being built, the plans have been drawn, all the different materials needed have been ordered and are delivered to the yards on a prearranged schedule and under present conditions often prefabricated, which has permitted much greater speed in completion. The job then is to follow the plans and build.

Great Variety

Not so with ship repair. Often, when a ship arrives at a repair yard, there are no plans available of what has to be done. A ship repair yard is equipped to handle any vessel from a lifeboat, tug, ferry, river steamer, barge, grain elevator, a small cargo vessel or a giant luxurious liner, a submarine, transport, a destroyer, cruiser, battleship, aircraft carrier, or any one of the other vessels in the fleet of a fighting navy.

The vessel might be of wood, concrete or steel construction. If the last, it could be either welded or riveted. It might be a coal burner or an oil burner. It could also be of sail. Its power propulsion plant might be of steam, with any one of a half dozen types of engines, or it might be a gas or diesel motor or an electric drive.

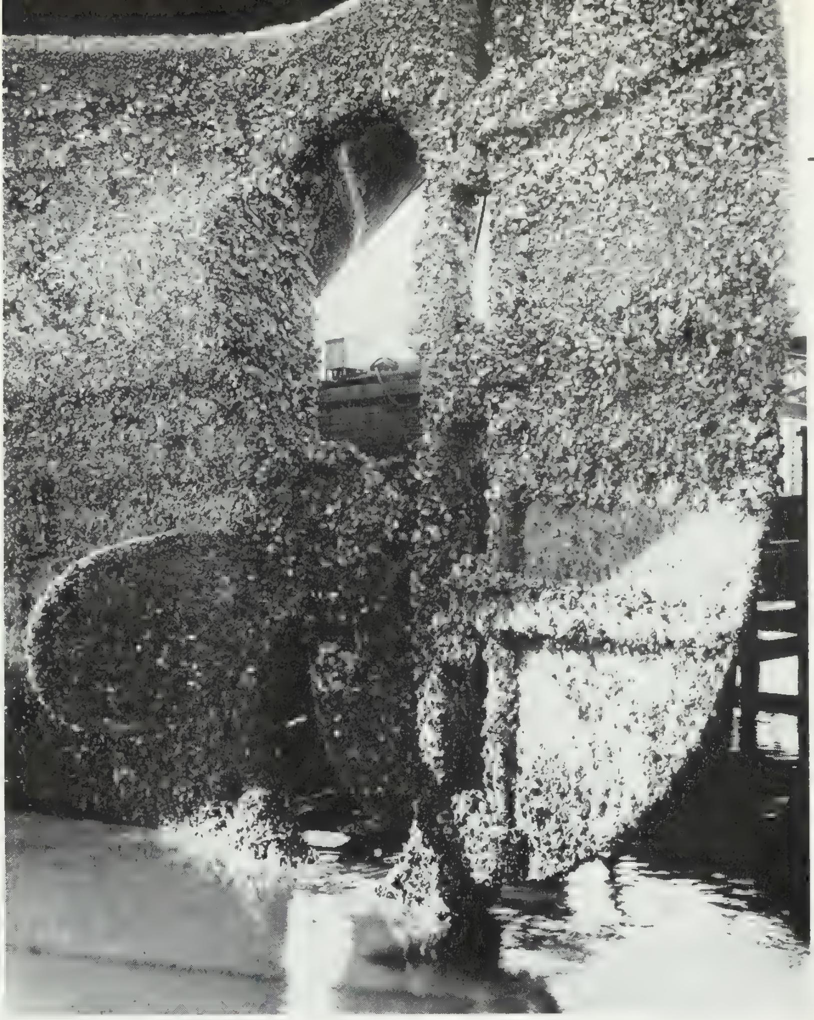
With all these varying types of ships, the repair men and their supervising force must be familiar. In other words, they must not only be experts in the repair of the ship itself but any part of the ship, no matter how intricate it might be. They must, in fact, be experts in any one of half a hundred or so skilled trades. For ship repair work requires the services of almost every branch of artisanship known to man. Blacksmiths, ship fitters, dock masters, carpenters, machinists, welders, riggers, riveters, painters, engineers, pipe fitters, electricians, plumbers, steam fitters, turbine bladers—these are just a few of the many artisans whose skills must be practiced to restore a ship to serviceable condition.

99% Experience

It must be remembered that very often there are no original plans of the ship from which the men may work. Beyond that, too, very seldom are any two jobs alike. True, the difference may be small at times, but as a rule each job is a new experience in itself. To do the work properly the mechanics must have a complete knowledge of their respective fields—a knowledge acquired only over long years of actual experience. It can be said with a more than reasonable degree of accuracy that ship repair work is 99 per cent experience and 1 per cent theory.

Never does a repair crew know exactly what has to be done or how the work is going to be done until after the ship has been drydocked and a minute check-up made. Very often the full extent of the damage a ship has suffered is not visible to the naked eye. The examination must be resolved into a diagnosis, and from that point on plans can be made.

A ship might suffer terrific damage from a torpedo or mine explosion, and



The Barnacle Family

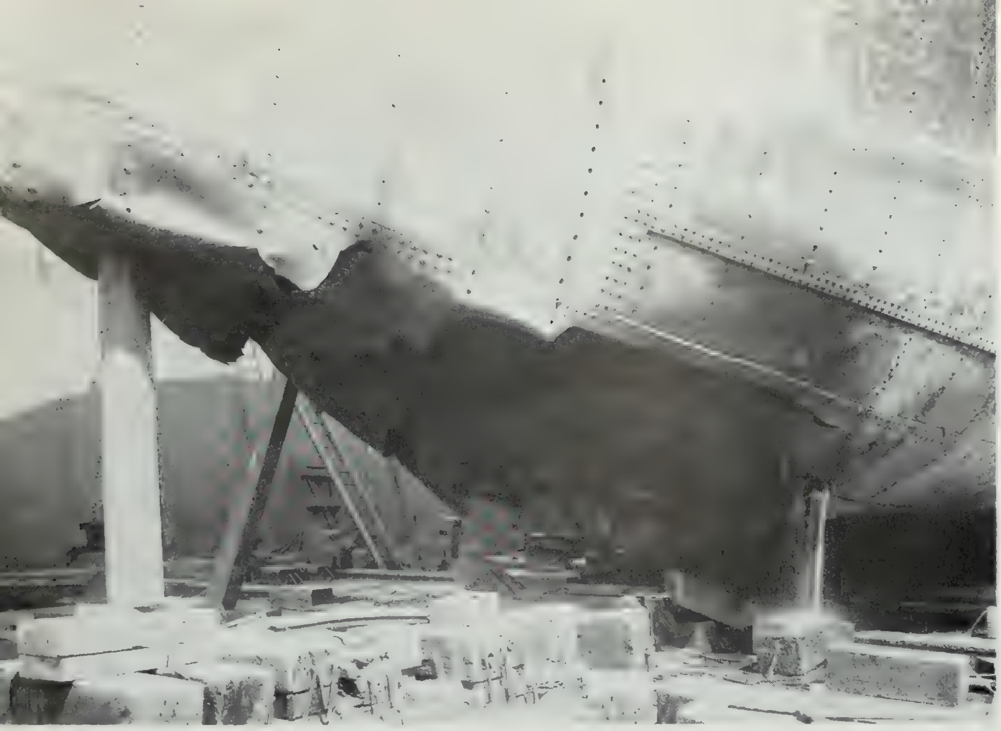
Old Bill Barnacle sticks to his ship;
He never gets ill on the stormiest trip;
Upside down he crosses the ocean;
When you do this you enjoy the motion.

Old Bill's family grows and grows;
Little relations arrive in rows;
And the faster the barnacles grow, Ye Ho,
The slower the bally old ship doth go.

Thousands of Barnacles, small and great,
Cling to the jolly old Ship of State,
So don't be alarmed if she seems to crawl;
The wonder is that she goes at all.

This anonymous rhyme appeared in *Punch* many years ago and is here quoted from memory. It expresses very aptly a condition that is very gratifying to the enemies of democracy.

Our ship repair men have the answer to these parasites. It consists of drydocking, thorough scraping of the entire under body, and applying a good anti-fouling composition. Unfortunately, the electors (you and I) seldom have the intestinal fortitude to apply the same treatment to the Ship of State.



STRANDING or bow-on collision often results in damage as shown here. Every case differs and requires expert survey.

yet all that could be seen would be a hole in the hull, with perhaps holes in the deck; or a comparatively few rivets may be shorn off and a few plates blown away—the weakened and bent ribs might not be visible, or weakened plates and rivets caused by the heat of the explosion might not be found if a most exacting examination were not made.

Or, a ship might run aground and all that would show would be bent plates. The keel might be strained, but unless and until plates were removed, that damage might not become known until the vessel was far at sea if only casual examination and repairs had been made.

To the eye, or even the ear, the engines may seem in good condition, but only by taking them down and examining every part can one be sure.

Conversion Jobs

The repair yard is frequently called upon for another type of job which is a different branch of the business—that of conversion. The owners of a vessel, which has done duty over a period of years, might want her fitted out for an entirely different type of service. In this kind of work, all of the ship repairman's ingenuity has to be exercised. True, he has plans for the "new" ship, but the basic part of the vessel has already been made. There is little or nothing he can do about changing the hull to any great degree; but such conversions have been made with marked success, and sometimes, by altering the shape of the stern, the speed of a vessel has been increased. Another phase of conversion is that of lengthening ships, which is done by cutting the vessel apart amidships and inserting additional sections.

Some time after the war, stories of great achievements in this field can be told which cannot be mentioned or even hinted at today. But it can be said that Adolf and Hirohito will be more than surprised, and most unpleasantly so, by some of the feats which have been accomplished in American ship repair yards.

But there is one story that can be told. A large tanker had been torpedoed and broke in two off the mid-Atlantic Coast. After tremendous struggles under adverse weather conditions, each of the two parts was raised and towed to a repair yard some hundreds of miles distant. If that vessel is not back in service by the time this appears in print, it will be shortly after.

Typical Salvage

But let's take a typical repair job and follow it through at a Todd ship repair plant. For obvious reasons the name of the ship, its type and its location are not going to be revealed. When it was decided by its owners that the vessel might be salvaged, it was aground and had been partly submerged for some time. There were large holes in the starboard side, the engine and boiler rooms were flooded. Generally speaking, it had taken a bad beating from the elements in addition to the initial damage.

The vessel was some hundreds of miles from the dry dock. The holes had to be closed and the ship raised and maneuvered to the dock. This was done, but it was not as easy as it sounds. After being placed in the graving dock, the examination was made and a detailed report of the "diagnosis" handed to the yard superintendent. It was found that a number of plates would have to be removed on both sides of the hull. In addition, a number of plates were slightly warped, but these, it was found, could be faired by heating and pounding with heavy steel hammers. In all, 92,000 rivets had to be removed to get rid of the bent frames and condemned plates, a sizable job in itself.

The bilge keels had to be renewed. The whole stern had to be overhauled. The top gudgeon for the pintle of the rudder was removed and replaced. The lower portion of the frame, which was bent, was heated and faired in place. A new rudder was built and four new blades of the propeller were installed.

All piping lines which were carried near the damaged portions of the hull had to be examined and were repaired or replaced as the need indicated.

Machinery Reconditioning

The main engines were removed and all cylinders, bearings, guides, etc., opened up, examined and tested. All packing, metallic and soft, was renewed. All reversing and other gear were overhauled. The crank shaft was trued up in the machine shop, and the thrust shaft was tested. Other lesser repairs were made to other parts of the machinery. The boilers were tested, and the oil burning equipment overhauled.

This major repair job was chosen as an illustration to show the thoroughness of inspection and the many different things that have to be done in ship repair. That ship is now in service, and its repair did not take one one-hundredth as long to accomplish as would the building of a new ship of equal size.

When that ship left the yard, it was as smart and trim as the day it first went into service. In fact, in some ways it was a better ship, for improvements had been made in the ventilating, electrical and wiring systems. Into that work went the accumulation of years of knowledge and experience — the kind of experience that has been tested and tempered by time on thousands of jobs with which men and ships have challenged the Todd organization. And it is that kind of experience and workmanship which is today enabling Todd ship repair yards to meet the challenge of the American and British governments in getting out jobs that men in the world of ships have said could not be done.

Stern Replaced

But let's look at another type of repair job. Exactly 64 feet of this vessel — the complete stern — including the rudder, stern frame, propeller, tail shaft, stern tube, two lengths of intermediate shaft and machinery and fittings in the section were lost when she was rammed by a much larger and heavier ship. As guides in their work of reconstruction, the rebuilders had only a small scale outline of the vessel, a deck plan and a photograph.

Yet from this meager information the afterpart of the ship was completely reconstructed and the vessel made ready for service in 18½ days—a record. The work was carefully coordinated; as the various plates, frames and ribs were being fabricated, work went forward in other parts of the yard on new shafting, engines, steering gear, winches, etc., so that a minimum of time was taken on the whole job. In effect, there were more than a dozen completely different jobs going ahead at the same time in as many different spots in the yard. And all parts were ready to be put into place as the stern end shell work progressed to the point where the installations could be made. It was a difficult and exacting timetable, but it was met.

Salvaged and Rebuilt

Or, take a third type of repair. The vessel had been badly damaged and sunk by an explosion. The superstructure was blown away and the force of the explosion had caused a bad buckle in the keel.

WHEN BIG STEEL BOTTOMS are damaged, as shown here, expert care and supervision is required in docking.

After being raised, temporary repairs were made and the vessel steamed to the repair yard under its own power. There the delicate part of the whole operation was to get her safely into drydock. The slightest miscalculation as the water was pumped out might result in the ship breaking apart in two or three pieces. Such an accident would have been disastrous. But careful checking of each section of the ship and an eagle eye on the split in the vessel's hull as the water was drawn out avoided even the suggestion of such a catastrophe. Slowly the water receded and slowly the keel began to settle on the blocks. So carefully had the drydocking been manipulated that when the pumping was completed the entire keel had fallen into line, notwithstanding that the bow of the vessel was 9 feet, 2 inches higher than the buckled spot and the stern 6 feet, 6 inches higher.

Financial Considerations

That is the mechanical and physical side of the picture of ship repair. There is another and more important side—that of the tremendous sums of money which must have been spent before a repair job can even be thought of. The proper location must have been found. All facilities for handling any size ship and any kind of a job must be available. All kinds of material must be on hand. The various groups of workmen and their tools must be ready.

Once the yards are equipped for operation, the maintenance and improvement charges begin. For a yard must be kept at the peak of efficiency at all times. That means new equipment has to be purchased; time- and labor-saving devices and activities must be worked, not only to meet competition but to keep the cost to the ship owners at the lowest possible mark. Excessive costs would mean less work, and finally no work.

As work increases, plant and facilities must be expanded, and at all times dredges must be on hand to keep the basins and channels dredged to the proper depth.

The past two years have seen an expansion in Todd yards that could not have been visualized four, or even three, years ago. Ships have grown larger and larger over the last decade and in the case of the United States Government there have been more and more of them built—both merchant and naval—with the inevitable need of repair. Even without the war, ship repair yards would have had to expand. The advent of war made the expansion greater, and in some respects more costly.

(Page 100, please)

U. S. M. C.

ITS FUNCTIONS AND ACHIEVEMENTS WITH THUMBNAIL BIOGRAPHIES OF ITS PERSONNEL

DIRECTOR

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C. W.
FLESHER

C. W. FLESHER: Born, Terre Haute, Indiana, November 11, 1904, and graduated from U. S. Naval Academy, 1927, with a commission as ensign. After serving two years as junior officer on board the U. S. S. *Colorado,* he went on U. S. S. *Hull* as Assistant Chief Engineer. August, 1929, he resigned from the Navy to become associated with the Westinghouse Electric and Manufacturing Company, specializing in steam apparatus. After six months of extensive training at the South Philadelphia Works, he was sent to the Chicago office, and shortly thereafter to the St. Louis office in charge of steam engineering in the Southwest district. In 1932, when the Navy began its building program, Mr. Flesher was transferred to the Westinghouse Marine Section at Washington, D. C., becoming manager in 1935.

He joined the Maritime Commission in November, 1938, as head of the Scientific Section. In January, 1940, he was promoted to the position of Chief, Machinery Scientific Preliminary Design and Specification Section.

In April, 1942, he was transferred to the Pacific Coast as **Director of the West Coast Regional Construction Office,** the position he now holds.

Mr. Flesher is a member of the Society of Naval Architects and Marine Engineers. He is married.

JOHN A. McKEOWN: Born in South Carolina; educated at Clemson College and Agricultural & Mechanical College of South Carolina; employed Navy Department, 8 years, prior to World War I; served as Lieut. Commander U. S. Navy in World War I; U. S. Shipping Board Chief Inspector, 8 years; Chief Surveyor, U. S. Salvage Association, $2\frac{1}{2}$ years; 5 years Newtex Steamship Corporation, Superintending Engineer; since 1937, employed by the Maritime Commission; present position, **Construction Assistant to Regional Director;** responsible for coordination of outside construction activities of the Maritime Commission on the West Coast.

DERYCK W. FERNHOUT: Born in The Netherlands; educated in England; comes from shipbuilding family; general manager, 9 years, Behr-Manning Corporation; vice president and European general manager of Durex Abrasives Company, 2 years; Secretary and Director of the Filsinger, Rhines & Campbell Corp. in New York, $1\frac{1}{2}$ years; employed by Maritime Commission since 1940; present position **Chief, Plant Engineering Section;** responsible for all plant facilities, construction and maintenance, the development of power resources for the shipyards, improvement of housing and transportation facilities, and development of better production techniques in shipbuilding.

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JOHN A.
McKEOWN

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DERYCK W.
FERNHOUT

Pacific Coast Regional Construction Office

THE WEST COAST Regional Construction Office of the U. S. Maritime Commission, located at Oakland, California, is a very potent and very constructive force operating for expediting of Pacific Coast shipbuilding schedules, so as to provide the shipyards with materials and machinery necessary, build and equip the ships, quickly decide administrative and financial problems, and to cut red tape in every way possible.

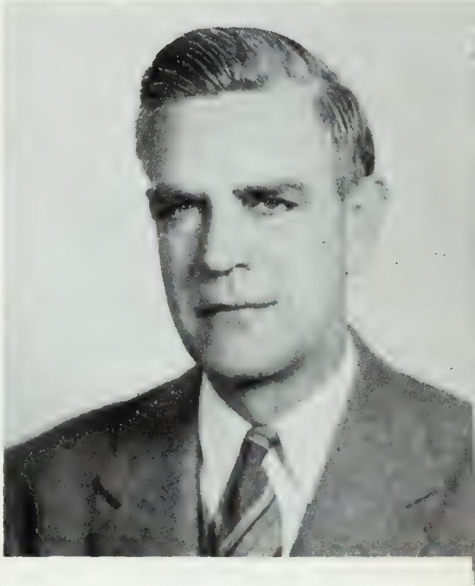
Under the practical and able direction of Carl W. Flesher, this office has shown since early June a remarkable rise in the daily average tonnage of steel erected into ships' hulls. The latest compilations of the curve indicate a close approach to 6000 tons daily in Pacific Coast shipyards working for the U. S. Maritime Commission. In fact, the line now points at 6000 tons daily by the 1st of October. This is equivalent to a rate of two Liberty ships daily.

The quiet, efficient operation of this office has on frequent occasions smoothed out management-labor problems by its very just and commonsense attitude toward all the factors concerned.

Every firm engaged in direct contract work or sub-contract work in merchant shipbuilding deals with this office, and Pacific Marine Review is glad to have the opportunity of presenting to its readers these portraits and thumb-nail biographies of the principal executives of this office.

Above Right:

EARL S. SHULTERS: Born and raised in Washington, D. C.; attended George Washington University in Mechanical Engineering; worked for Federal Shipbuilding and Dry Dock Company, Kearny, New Jersey; and transferred to the U. S. Maritime Commission five years ago. He is now **Technical Assistant to the Regional Director.** In this capacity he is responsible for the coordination of all engineering functions under the jurisdiction of the Regional Office. Author of the treatise "Modern Marine Refrigeration," and the chapter "Marine Refrigeration" in Volume 2 of the *Modern Marine Engineers Manual*, now in the process of publication. A member of the American Society of Mechanical Engineers and of the Society of Naval Architects and Marine Engineers.



B. F. CARTER: Born in Roanoke, and raised in Norfolk, Virginia; worked for the Seaboard Railroad, three years, as engineering draftsman; four years for the Dupont Company; sixteen years with the United States Shipping Board and the United States Maritime Commission; and is now **Administrative Officer** for the West Coast Regional Construction Office. In this capacity, he administers the bulk of all matters other than those of a technical or professional nature.

HENRY C. ACKER: Born on Staten Island, New York; 14 years president and general manager, East Coast Boiler & Machinery Works, specializing in ship repair; employed by Maritime Commission in 1941; and now **Chief of Ship Purchase Control Section,** responsible for the approval of purchases made by shipyards which are to be reimbursed by the Maritime Commission.

GERALD B. NEWBY: Born in North Carolina; educated at University of North Carolina; employed by Newport News Shipbuilding & Dry Dock Company 4 years; Los Angeles Shipbuilding & Drydock Company 20 years; as Naval Architect and Chief Engineer; operated as consulting Naval Architect in Los Angeles, 1928 to 1942; employed by Maritime Commission in 1942; present position, **Chief Hull Plan Approval Section**; responsible for the approval of plans and material requisitions in connection with all phases of hull construction for ships being constructed on the West Coast.

HOWARD E. ST. CLAIR: Born in Virginia; educated at Webb Institute of Marine Engineering & Naval Architecture and George Washington University; employed by Navy Department as a Naval Architect, 10 years; employed by Maritime Commission in 1939; present position, **Assistant Chief Hull Plan Approval Section**; assists in supervising the approval of the plans and material requisitions for all hull construction.

GREGORY S. VAITSES: Born in Boston, Massachusetts; educated, Drexel Institute of Technology, Philadelphia, Pa.; employed by New York Shipbuilding Co. for 13 years; with Navy Dept., 5 years; Maritime Commission since 1939; present position **Chief, Electrical Plan Approval Section**, in charge of plans and material and all electrical installations for ships constructed on the West Coast; also serving at present time in the position of Acting Chief, Engineering Plan Approval Section; responsible for approval of plans and material requisitions for ships being constructed on the West Coast.

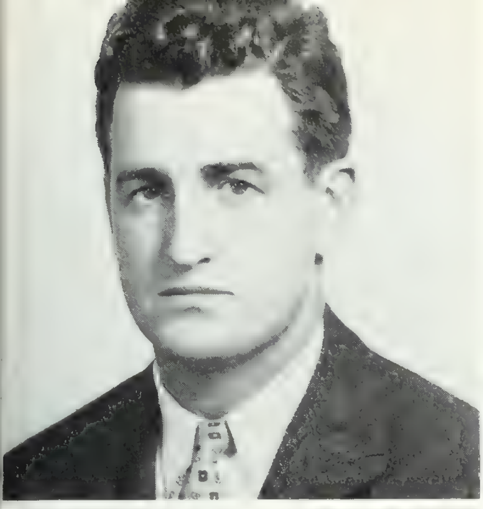
BOTTOM ROW

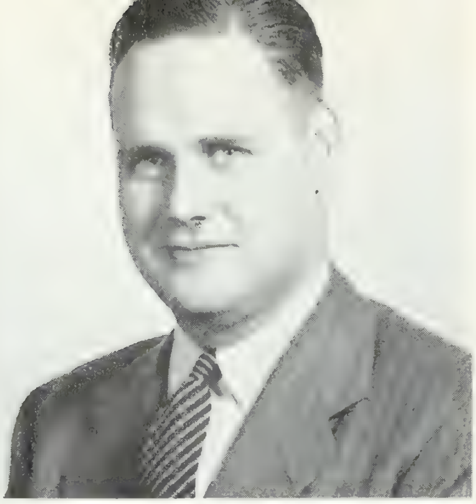
(Left to right)

CARL F. FARBACH: Born in Ohio; educated, Harvard University and Harvard Law School; practiced law in New York City from 1926 to 1932; Counsel with Reconstruction Finance Corp. 1932 to 1933; Counsel for Public Works Administration in Washington, D. C., 1933 to 1939; General Counsel of U. S. Maritime Commission, 1939 to 1942; now **Special Counsel** for the Maritime Commission and War Shipping Administration on the Pacific Coast.

JOHN L. TREBILCOCK: Born in Michigan; educated, Michigan College of Mining & Technology; 3 years with Fairbanks, Morse & Co. as diesel engineer; employed by Maritime Commission since 1940; present position **Chief of the Diesel Branch**; responsible for all developmental work on marine diesel engines to be used on West Coast ships.

EDWIN L. SWAIN: Born in Michigan; degree of Marine Engineer from University of Michigan; 4 years with Newport News Shipbuilding & Dry Dock Co.; been with Maritime Commission since 1938; present position, **Chief, Priority, Expediting & Statistical Report Section**; responsible for expediting procurement of critical materials used in ship construction, and responsible for the preparation of all statistical reports called for by the Regional Office.





TOP ROW

(Left to right)

WILLIAM R. C. COCKE, JR.: Born in Virginia; educated, Lafayette College, Pa.; employed by Bethlehem Steel Company, 6 years; present position **Steel Coordinator;** responsible for the scheduling and expediting of all steel used in ship construction on the West Coast.

COURTLEIGH W. ELIASON: Born in Hyrum, Utah; attended Utah State College, and Stanford Graduate School of Business; assistant manager of Industrial Relations for the Columbia Steel Company; member, Industrial Relations faculty of the University of Michigan Graduate School of Business; staff member of the Industrial Relations Department of the United States Steel Corporation; and is now the **Pacific Coast Industrial Advisor** for the United States Maritime Commission, which includes the co-ordination of all industrial relations and labor management relations in the various shipyards under contract with the U. S. Maritime Commission.

WILLIAM BERNARD: Born in Fredericksburg, Virginia; attended University of Virginia and Cornell University; worked for the Bureau of Marine Inspection and Navigation in Washington, D. C.; transferred to the U. S. Maritime Commission as Materials Engineer; and is now Chief of Materials Inspection work on the West Coast.

S. R. KIRBY: Born in Minnesota; in banking and construction work since 1928; was secretary-treasurer of International Construction Company, Duluth, Minnesota; now is vice president of Northern National Bank of Duluth, Minn., and First National Banks of Hibbing and Virginia, Minn.; employed by the Maritime Commission in 1942 as **Regional Assistant to the Director of Finance;** now acts as representative of the Commission in all financial matters which arise between the Maritime Commission and its contractors on the West Coast.

E. G. MONTGOMERY: Born in Colorado; educated, University of California, Berkeley; employed by Maritime Commission since 1939; present position **Chief, Personnel Section;** responsible for personnel management in connection with employees of the West Coast Regional Office.

H. H. FALCONER: Born in Petersburg, Virginia, and raised in Washington, D. C.; graduate, George Washington University, Engineering Department; worked for Virginia Shipbuilding Corporation as assistant chief hull draftsman, with Congoleum Nairn, Inc., Kerney, New Jersey, as sales promoter; and for the past three years with Maritime Commission. Now is **Acting Head of the Cost Review Unit** which is charged with the review and approval of all requests by contractors for contract changes in plans and specifications and the changes in man hours involved as the result of these changes.

LESTER W. MOUAT: Born in New York City; educated, Webb Institute of Marine Engineering & Naval Architecture; 6 years with Bureau of Construction & Repair, Navy Dept.; employed by Maritime Commission since 1941; now **Chief, Surplus Materials Section;** in charge of salvage, recovery, and reallocation of materials purchased for but not used by shipbuilding companies in order to help meet the shortage of critical materials.

HARRY HELLER: Born Brooklyn, New York; educated, Polytechnic Institute of Brooklyn and New York University; employed 6 years with Port of New York Authority; employed by Maritime Commission since 1940; present position, **Chief, Allowance List Section;** responsible for the preparation of official allowance lists for all vessels constructed on the West Coast.

W. H. QUARG: Born in San Francisco; raised in the Bay Area; worked for California State Railroad Commission, and for U. S. Navy Department during the last war as an inspector; transferred to Washington, D. C., Bureau of Supplies and Accounts; transferred to the Maritime Commission, and approximately four years ago, was returned to San Francisco. At the present time he is West Coast **Regional Construction Auditor** for the Commission.

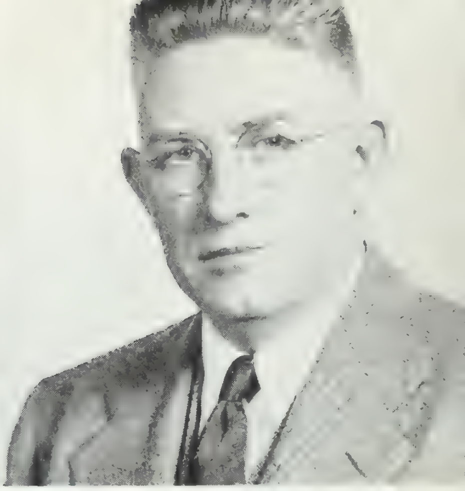
BOTTOM ROW

(Left to right)

DAVID CURRIER: Born in Derry, New Hampshire and raised in Haverill, Massachusetts and Washington, D. C.; graduated from Brown University in the field of engineering; worked with the American Bureau of Shipping; was their representative surveying all ships in Brazil, Uruguay, and Argentine waters; worked for the Shipping Board in World War I constructing vessels, and with the Norway Pacific Drydock Company, Seattle, Washington. Now is **Chief Inspector Pacific Coast District** in charge of all inspection matters in the West Coast Shipyards.

MONROE W. JACKSON: Joined the United States Navy in 1911; from 1916 to 1924, was at Norfolk Navy Yard; 1924-1934, was master electrician for the Sixteenth Naval District, stationed at Cavite, Philippines; 1935-1936, was Senior Electrical Inspector for the Navy at the Newport News Shipbuilding & Drydock Company; 1936 and 1937, was senior electrical inspector for the Navy at the Bethlehem Union plant, San Francisco. In 1939 Mr. Jackson joined the Maritime Commission staff as senior electrical inspector at the Tampa Shipbuilding Company, Tampa, Florida; and in 1940, was named **Electrical Inspection Coordinator** for the Pacific Coast.

ERVING Z. HUMPHREY: Born in California; employed 3 years with Hanlon Dry Dock & Shipbuilding Company, San Francisco, as Naval Architect; and K. Horden Company, Monterey, California, 3 years as Marine Superintendent; employed by Bethlehem Steel Co., San Francisco, in the Hull Department, 2½ years; and Moore Dry Dock Co., Oakland, as chief hull draftsman for 1½ years; employed by Commission since 1940; present position, **Hull Inspection Coordinator;** responsible for the coordination of all hull inspection work performed on the Pacific Coast.



TOP ROW
(Left to right)

CHRISTIAN W. HJELM: Born in Norway; educated, Brooklyn Technical College and George Washington University; employed by U. S. Navy, 17 years as marine engineer; employed by Maritime Commission, 1939; present position, **Chief of the Machinery and Heat Exchange Section;** responsible for the approval of plans and material requisitions for all machinery and heat exchange equipment being installed in West Coast ships.

R. F. KRAGE: Born in Nebraska; educated, University of Nebraska; 13 years with Cudahy Packing Company as refrigeration engineer; employed by Maritime Commission since 1941; present position, **Chief, Deck Machinery & Refrigeration Section;** responsible for the approval of plans and material requisitions for all deck machinery and refrigeration equipment being installed on West Coast vessels.

GRANVILLE F. MINOR: Born in Virginia; educated, Virginia Polytechnic Institute; second lieutenant in World War I; employed by Navy Department as Marine Engineer, 9 years; been with Maritime Commission since 1939; present position, **Chief of Engineering Piping Plan Approval Section;** responsible for approval of plans and material requisitions for all piping installations on West Coast vessels.

E. RANDOLPH STIGEN: Born in Trondhiem, Norway; moved to the San Francisco Bay area at an early age; went to sea for the Standard Oil Company; became interested in marine engineering; attended the University of Nevada in the Mechanical Engineering option; worked with the Bethlehem Steel Corporation, Bethlehem, Pa.; and with Bethlehem Shipbuilding, Fore River plant, Quincy, Massachusetts; returned to sea as an operating engineer with Standard Oil; and later became a Naval Architect for Standard Oil. Now is **Acting Chief of the Trial Board Section,** which is engaged in conducting trial tests and runs on vessels constructed on the Pacific Coast for the U. S. Maritime Commission.

HARRY B. TAYLOR: Born in England; educated, Durham University, Newcastle, England; employed 4 years with the Parsons Marine Steam Turbine Company; 2 years with Seattle Construction & Dry Dock Company as assistant to chief engineer; 4 years with Wallace & Coughlan Shipbuilding Corporation, Vancouver, B. C., as chief engineer; 6 years with the State of California as a mechanical engineer; employed by Maritime Commission in 1940; now is **Machinery Inspection Coordinator,** responsible for the coordinating of all machinery inspection performed on West Coast vessels.

ROSS M. KRAMER: Born and raised in San Francisco; attended local schools; was employed by the Navy Department; and later transferred to the U. S. Maritime Commission. He now is **Administrative Assistant to the Regional Construction Auditor** as well as performing the functions of Resident Auditor for the Bethlehem Steel Corporation, San Francisco plant.

THE MINUTE MAN FLAG FLIES UNDER "OLD GLORY" to denote that the employees are buying their quota of War Bonds.

Pacific

CHRISTENS TWO

22 DAYS FROM

A RATHER REMARKABLE record was made by the Pacific Coast Bridge Company Yard No. 1 at Alameda, California, when on August 25 that firm floated two U. S. M. C. cargo vessels of the "coaster" type out of its building basin just 22 days after keel laying. These two ships were sponsored by Miss Vivien Marie Boersig and Miss Margaret Angel Rasmussen, and were christened *Reuben Snow* and *Caleb Sprague,* respectively.

This shipyard has a contract to build ten of these vessels which are wholly of steel construction, all welded, with two large cargo holds, one for-

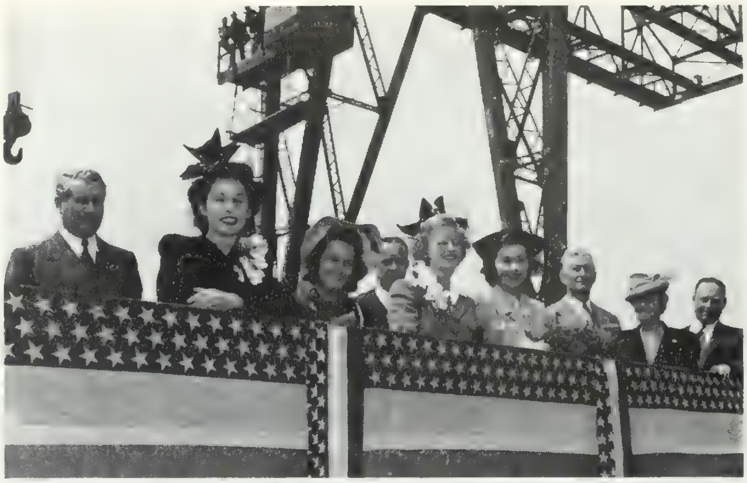
Bridge

COASTERS

KEEL LAYING

ward and one aft of the midship machinery space. Propulsion machinery consists of a triple-expansion steam engine directly connected to the propeller shaft and taking steam from two water tube coal-burning boilers.

The Pacific Bridge Company yard is laid out to serve one large building basin, approximately 600 feet long and 80 feet wide. The floor of this basin is 8 feet below mean low tide level of the harbor water into which the basin opens. The entrance is closed with a caisson gate equipped with large valves for admitting water into the basin.

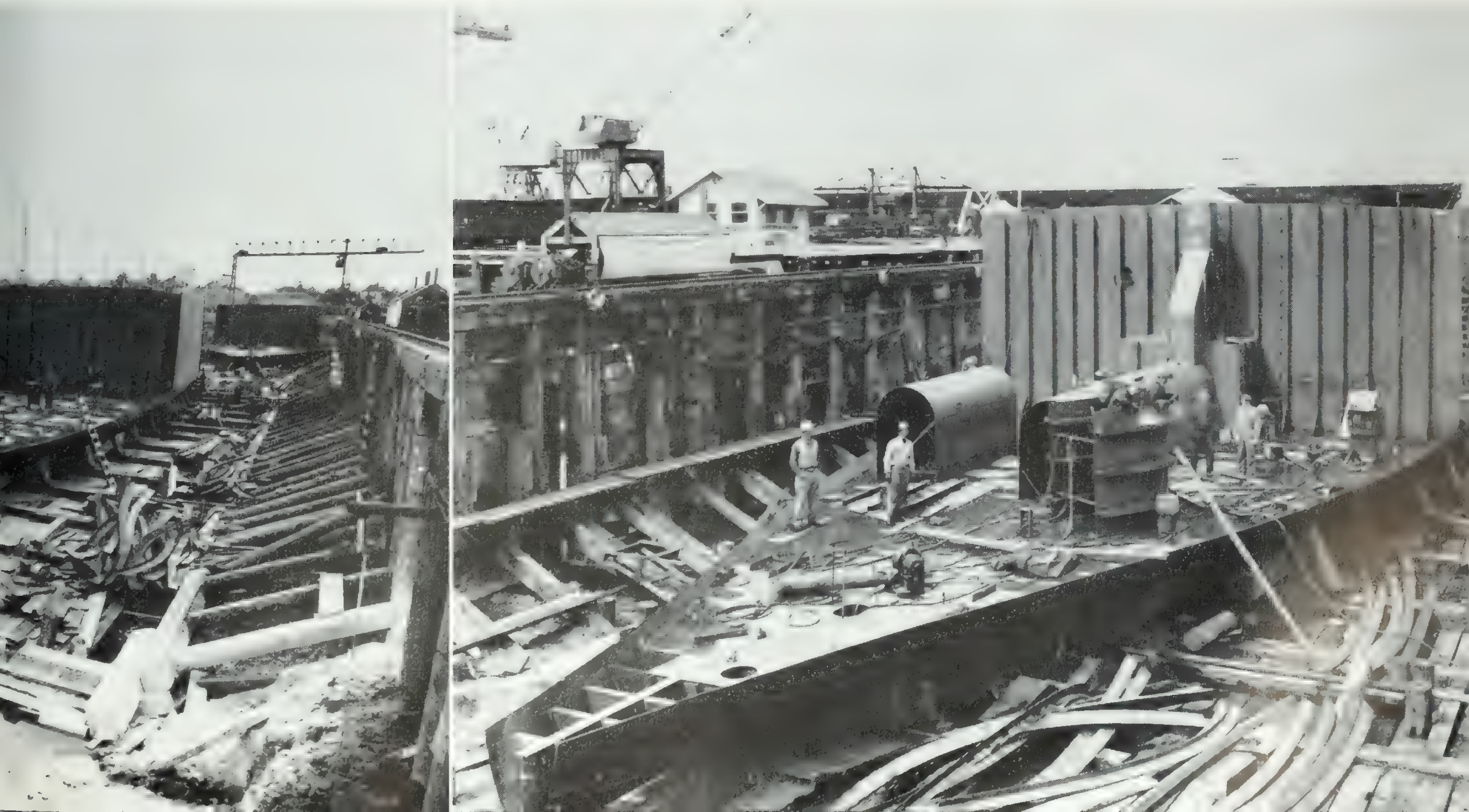


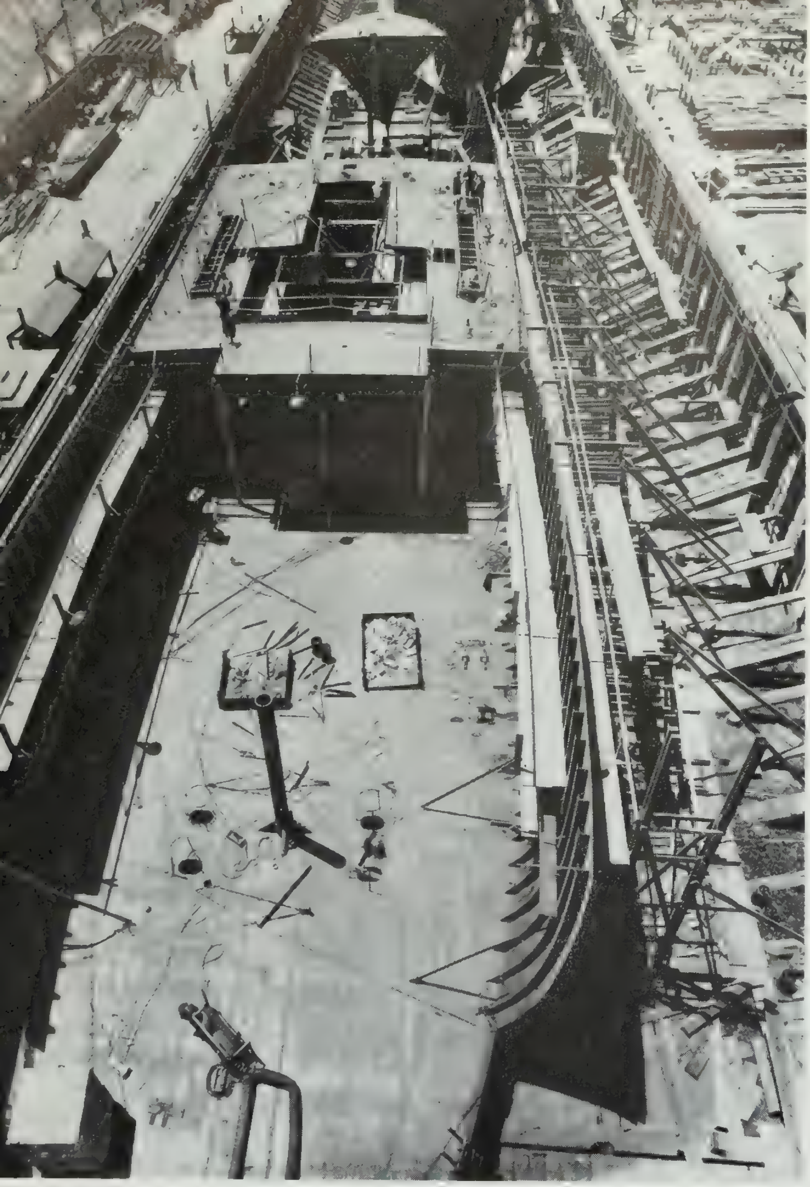
Christening Party . . .

READY FOR RIDE THROUGH THE AIR on the platform which is lifted by a gantry crane, moved to the vessels, and then lowered into position for the bottle-breaking ceremonies. Left to right: Emmett J. Fallon, general manager, Shipbuilding Division, Pacific Bridge; Miss Beverly Spitzer, maid of honor; Miss Vivian Marie Boersig, sponsor of Ruben Snow; W. C. Swigert, president, Pacific Bridge; Miss Marion Dow, attendant maid of honor; Miss Margaret Angel Rasmussen, sponsor of Caleb Sprague, daughter of Mold Loft Superintendent J. A. Rasmussen; F. C. Staub, a principal machinery inspector for the Maritime Commission; Mrs. Staub; and R. E. Boersig, general superintendent, Yard No. 1.

"Coaster" Progression in a Basin . . .

Bottom strip, left to right: First view shows keel laying of Hull No. 4 on June 4. At Pacific Bridge Co., laying a keel means laying a complete section of the double bottom. Middle view shows two hulls in process of construction. Several bulkheads and one section of shell plating, all assembled, have been placed on the inner bottom. Last view shows the last bulkhead in place. The vessel is now ready to receive preassembled sections of side frames and plating.



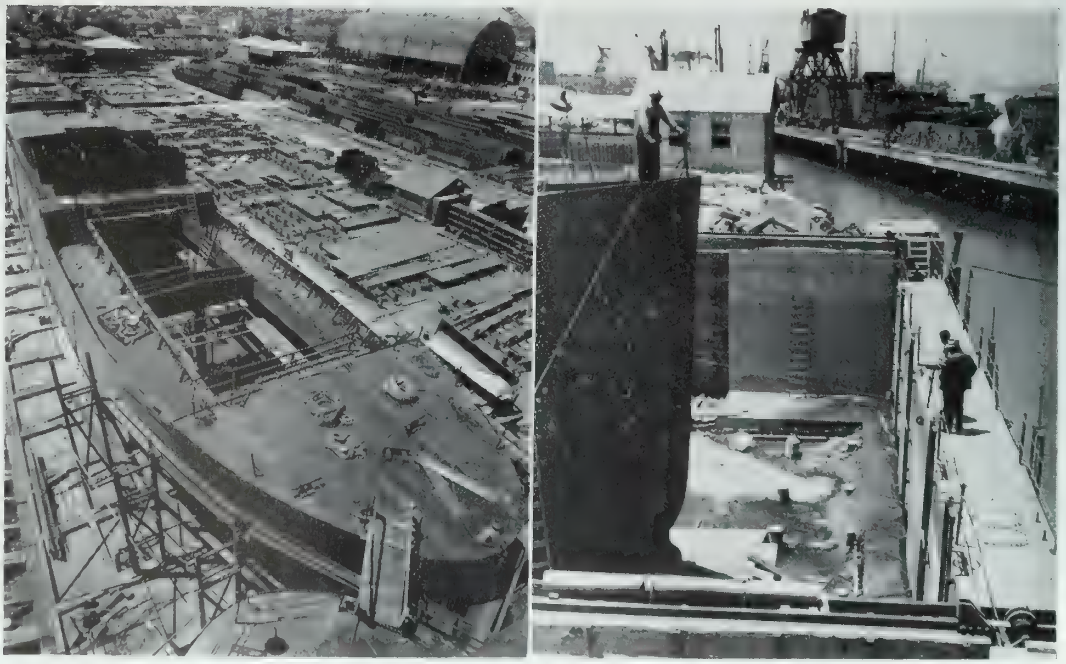


STERN AND BOW sections, prefabricated, are put in place and the hulls will soon be ready to receive the beams and deck plating.

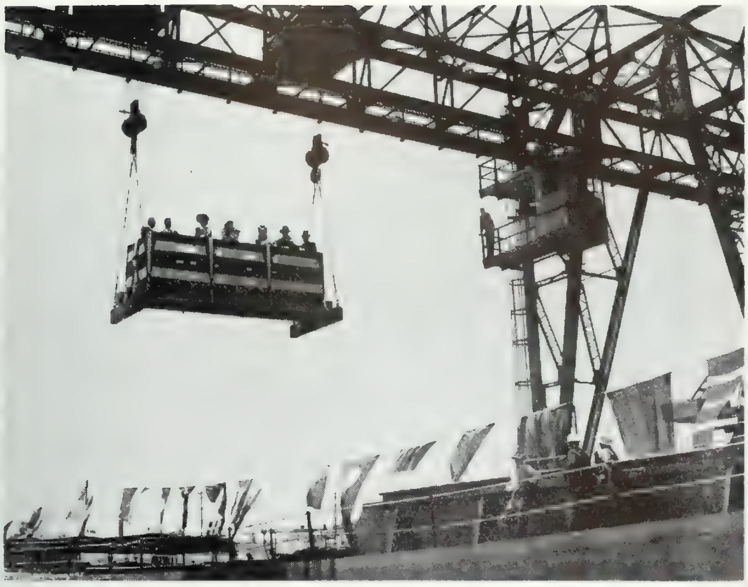
On the floor of this basin is laid a line of keel blocks long enough to take the keels of two "coaster" type steamers arranged bow to stern, and on these the hulls are erected. When ready for launching, a gayly decorated platform with the two sponsors and the launching party aboard is swung out over the basin by the big crane and lowered to a hanging stance at the center of the basin, just between the bow of one hull and the stern of the other. The sponsors christen their respective steamers, the platform is raised and swung ashore, and the valves are opened in the caisson to flood the basin, while the usual program goes on shoreside.

When the vessels' hulls are afloat and clear of the bottom, the caisson gate is floated out and the hull pulled out into the stream and around to the outfitting dock.

A large plate shop is surmounted by a fine mold loft floor. In this plate shop is an ample provision of facilities, such as drills, punches, bending slab, furnace, and rolls to take care of all forming and fabricating needs for the hulls of the "coasters." In this shop, bow and stern sections are preassembled in an inverted position. These assemblies are loaded on large dollies and hauled down to the head of the basin. Here they are picked up and turned over by the large traveling crane that spans the basin. This crane spots them in place on the hull and they are welded in place.



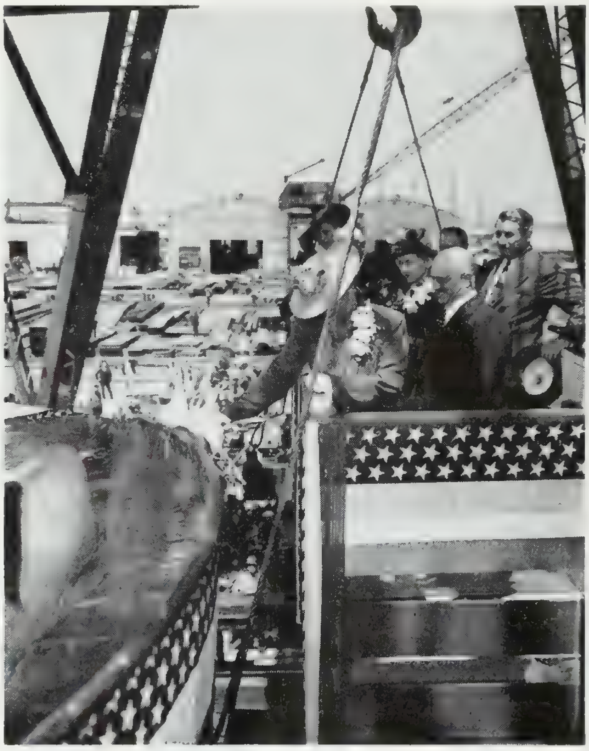
LEFT VIEW: Ready for the last few touches before being floated out of the basin. RIGHT VIEW: The signal is given and the water starts pouring into the basin. When the ship is afloat the caisson gates will be opened and a tug will haul her out into the estuary.



SUSPENDED IN MID-AIR, the christening platform loaded with the sponsors' party is riding smoothly to the spot where it will be lowered between the stern and bow of the two vessels.

●

BELOW: Miss Jeannie McIntyre, sister-in-law of James Smith, Principal Machinery Inspector of Yard No. 1, U. S. M. C., reaches off the rail of the traveling platform and smashes the champagne bottle right on the nose of Samuel V. Shreve on July 27.



Preassemblies of the other parts of the hull are made on the large area of welding skids opposite the head of the basin.

A machine shop, a pipe shop, an electrical shop, a paint shop, a riggers' shop, a warehouse, and an administration building are grouped for greatest effectiveness in reference to the basin.

Pacific Bridge Company is very proud of its safety record on this "coaster" contract. To date, there has not been a single fatality and the most serious mutilation was the loss of one thumb. The frequency record of lost-time accidents in this plant shows a very effective safety program.

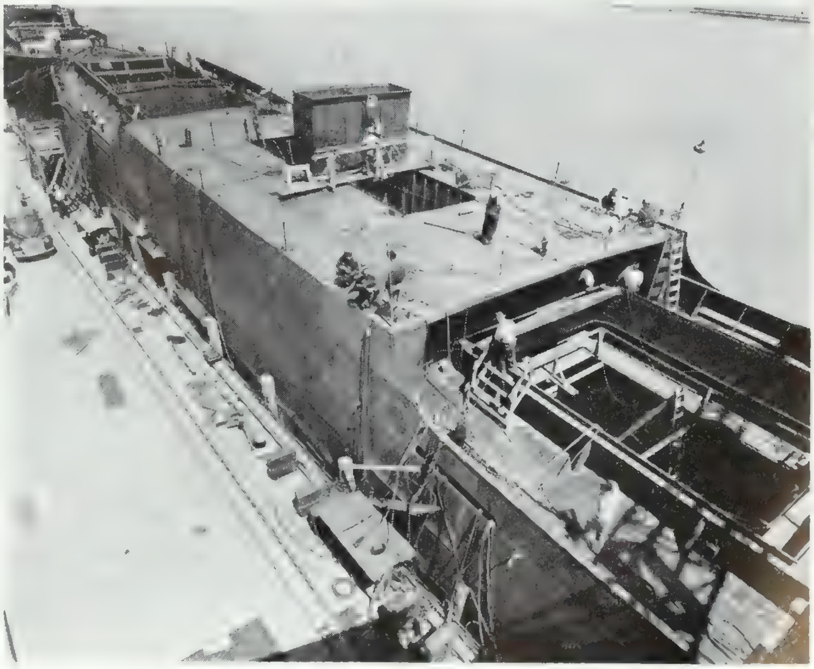
Ten departments had no lost-time accidents during August. These were electricians, shop machinists, stage riggers, flangers, chippers, pipe fitters, truck drivers, crane operators, and maintenance men.

Five of these ten (the electricians, shop machinists, painters, stage riggers and truck drivers) have had a perfect no-accident record for May, June, July and August.

This fine safety record combined with such a notable record of speed in construction is very unusual. Management gives the credit to the unusually fine "esprit de corps," which exists among the personnel of the yard and to the very cordial management-labor relations which prevail.

●

AT THE OUTFITTING DOCK (bottom) the two hulls will receive the finishing touches and all equipment and will soon be ready to be delivered into service.



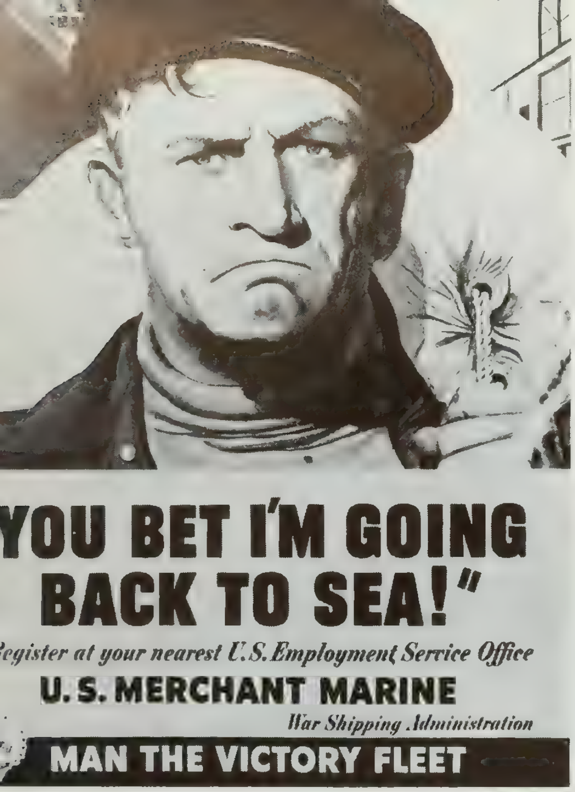
Shipbuilder

A CLEARING HOUSE FOR IDEAS ON THE WAR-WINNING JOB OF WHOLESALE PRODUCTION ON SKILL IN THE MARITIME CRAFTS

Calling . . .
ALL SEAMEN

by Captain Edward Macauley

Deputy Administrator of the War Shipping Administration and member of the United States Maritime Commission


"YOU BET I'M GOING BACK TO SEA!"
Register at your nearest U.S. Employment Service Office
U.S. MERCHANT MARINE
War Shipping Administration
MAN THE VICTORY FLEET

TODAY, THE RECRUITMENT and Manning Organization of the War Shipping Administration is tackling the Herculean task of supplying crews to man the 2,000 or more ships due off the ways of American yards by the end of 1943. This will require approximately 30,000 licensed officers and 90,000 men. The RMO is putting on a special registration drive to bring skilled maritime workers of all ratings back to the sea. These men are urged to register at any office of the U. S. Employment Service, which concentrated on this campaign between September 8 and 18. However, USES offices will remain registration centers for seafaring men throughout the war.

In the face of a four-ships-a-day production program, the RMO must solve the ever-growing problem of a country-wide shortage of ship's engineers as well as numerous acute local shortages of firemen, cooks and able-bodied seamen. Skilled licensed and unlicensed seamen now working at shore jobs should realize that upon their decision to return to sea may depend their country's future as a strong, free nation.

The War Shipping Administration estimates that approximately two-thirds of this country's entire active seafaring community are now at sea; the remainder working ashore.

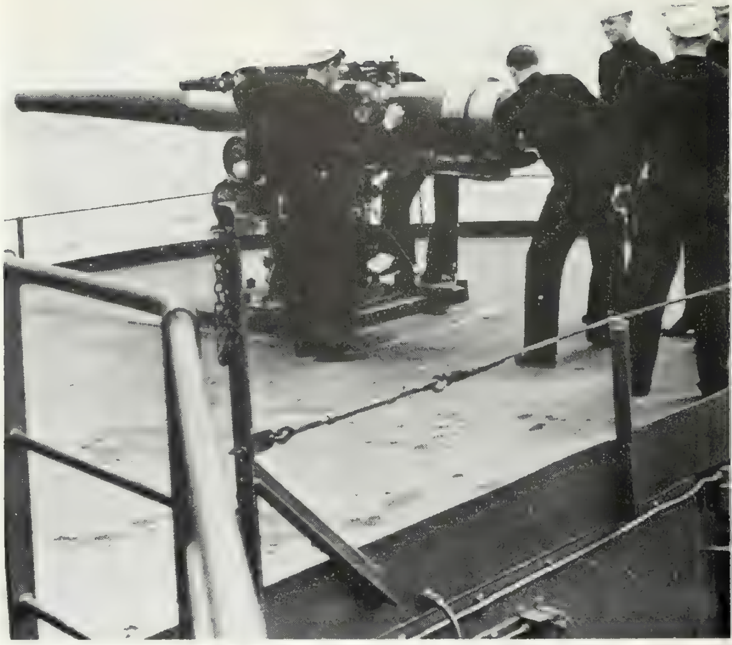
One of the jobs of the Recruitment and Manning Organization is to make this one-third realize that if ever their country stands in need of their service the time is now.

Though as a rule merchant seamen are matter-of-fact people, not given to self-dramatization, in the mirror of this war they must be made to see their importance to our war effort. They must realize that between us and the enemy stands their technical skill, their physical strength, their courage and resourcefulness in getting our ships through.

In this war of distances, it is not the number of tanks and planes and guns which can be produced that will

CREW'S MESS ON A LIBERTY

And Seaman Training



GUN CREW
on a Liberty

win, but the number of tanks and planes and guns which can be taken where they can be used against the enemy when they are needed.

Wherever we send men and supplies, there go our merchant seamen—to the cold, bleak waters on the way to Iceland and Russia, down the shark-infested seas of the Caribbean or the Southwest Pacific, over the long route round the Cape of Good Hope to the Near East or the equally long and hazardous voyage to India and Australia. Every time these men of our merchant fleet go to sea they take their lives in their hands.

Skipper Calls For Volunteers

There is the story of the crew of a medium-sized freighter who fought a running action with a submarine before their ship was struck and they were forced to go over the side. The submarine fired two torpedoes which missed and then a third found its mark. The Captain gave the order to abandon ship, so all lifeboats and rafts were launched and the crew rowed away from the damaged vessel. After several minutes, it appeared that the ship had a chance to remain afloat; the skipper called for volunteers to go back aboard for another shot at the enemy. The entire crew returned. Back on board, the gunners spent 20 minutes firing at the sub and scoring two possible hits before they were again struck by a torpedo and forced to leave the ship. Four minutes after they had cleared her sides, she sank.

TRAINING QUIZ

See if you can answer the following quiz problems accurately. Then read the article, "The Foundation of the Ship," on the following page, wherein you will find the answers.

1. *Plimsoll mark* is:
   (a) Foreign coin.
   (b) A man's name.
   (c) International load line marks.
2. What four of the following tonnage terms are correct: (a) lightweight tonnage; (b) gross tonnage; (c) heavy tonnage; (d) replacement tonnage; (e) deadweight tonnage; (f) cargo tonnage; (g) net tonnage; (h) displacement tonnage; (i) liveweight tonnage.
3. *B. P.* means: (a) between parallels; (b) between perpendiculars; (c) between pokes; (d) by-pass; (e) before poker.
4. *Load line* is: (a) a rope to lower or raise cargo; (b) maximum point at which cargo can be stowed; (c) the water line to which a vessel may be safely loaded.
5. When the light from a lighthouse would be directly perpendicular to your ship's keel amidships, the lighthouse would be: (a) athwartship; (b) abeam; (c) transverse of the ship; (d) welcome sight.
6. *Draft* is:
   (a) Something that blows around the legs.
   (b) The vertical distance from the bottom of the keel to the load line.
   (c) A type of beer.
   (d) The vertical distance from the bottom of the hold to the deck.
7. The term *grain cubic* means the cubic measurement of bulk cargo in the hold. Right or wrong?
8. Packaged cargoes are measured by: (a) the bale cubic; (b) the ruler; (c) bulk scales; (d) package scales.
9. Abeam is defined as "at right angles to the keel." Right or wrong?
10. Is deadweight cargo measured in long tons or short tons?

Chief Saves Ship

Or take the Chief Engineer who, by competence and courage, saved a valuable ship and cargo. The vessel was torpedoed without warning somewhere in the South Atlantic. After the signal to abandon ship had been given, the Chief and the Second Assistant Engineer went below and made the engine room shipshape before taking to the lifeboats. After landing on one of the islands, the Chief organized a salvage party and returned 30 hours later to see if his ship was still afloat. The vessel was burning and had taken on more of a list to starboard than on the previous day. However, the crew boarded her, brought the fire under control and by pumping water to the empty port side tanks righted her on an even keel again. They started to tow her into port but soon found that she was able to make better speed under her own power. As a result of the action taken by these brave and intelligent engineers, this ship, after some temporary repairs, was able to proceed to an American port where she was put in first-class condition again.

Seaman Saves Crew

And just as often as not, it is some fireman, cook or seaman who is the hero of a disaster at sea. Recently an able-bodied seaman brought 21 survivors of his torpedoed ship to safety after three days and nights on a raft in the Caribbean. In all that time, this seaman had no rest whatsoever. Moreover, after making certain of the safety of his companions, he again without rest, travelled 24 hours on foot through island jungles to reach a small village where he could get assistance. Here he borrowed a boat and induced six men to row him to the Santo Domingo mainland. Again this seaman, whose exploits sound like something out of a Norse saga, took time out only for a light meal and then accompanied a Haitian Coast Guard vessel back to where he had left his stranded shipmates.

The files of the Navy, the Maritime Commission and the Coast Guard are loaded with records of incredible daring and endurance. Their names, as in any American community, may be English, Irish, Scotch or Scandinavian, French, Polish, Greek or Russian. Ashore they may quarrel and even fight, but when trouble strikes aboard ship they stand together. There is a brotherhood of the sea, no matter what a man's origin or capacity, that makes for solidarity and mutual aid in the face of danger.

The Foundation FOR THE SHIP

IV More Basic Ship Terms

IN OUR LAST installment, we called attention to several basic ship or nautical terms which are wrongly defined in the new glossaries issued especially for the present shipbuilder training schools. The first term in these glossaries is the word *abeam,* and the definition given is *"At right angles to the keel."* Other terms in the first letter bracket are: *Athwart,* defined as *"Across, from side to side; transverse; at right angles to the keel;"* and *athwartship,* defined as *"At right angles to the keel. Same as Abeam."*

From these definitions, one gathers that these three words are interchangeable in their use. However, that impression would be wrong. *Abeam* does not mean at right angles to the keel and should not be applied to objects within or a part of the ship. *Abeam* means *abreast of or off the beam,* and is used in reference to some object in the water, on the land, or on the dock.

Athwart means *across;* and *athwartship* means *across the ship.*

It is correct to speak of an athwartship bulkhead, but no nautical man would speak of an abeam bulkhead.

If another ship were sighted on the starboard side with her midship section opposite that of your ship, you would correctly report her as vessel *abeam* starboard.

If your ship was passing a lighthouse, that lighthouse would be abeam when it was on a line perpendicular to your ship's keel amidships.

Perhaps the most unsatisfactory definition of all in the recent shipbuilding glossaries is that for the word *tonnage,* which is defined as *"A measure of a vessel's interior volume."* Certainly, any shipyard worker who had such a definition well learned would soon be greatly confused on the subject as he would hear the various tonnages discussed by old-timers.

Tonnage is a very complicated subject to the layman, and is made more so through the careless use of this term by writers in the commercial and technical press, not only of America, but of the world.

As one notes the various misuses of the term tonnage, the impression grows that many of them are carefully made in the interest of various propaganda purposes.

Let's see if we cannot clear the decks on tonnage terms.

Four tonnage terms are used generally in relation to a ship. These are:

Displacement tonnage.

Deadweight tonnage.

LOWERING A LIFEBOAT
on a Liberty steamer.

Gross tonnage.
Net tonnage.

Each of the first two has two measurements as:

Displacement light.
Displacement heavy.
Deadweight total.
Deadweight cargo.

Displacement and deadweight are measured in the weight unit called the *long ton,* equal to 2240 pounds.

Gross and net tonnage are measured in the artificial cubic ton of 100 cubic feet.

Now, you will remember, we learned in the first installment of this series that anything floating in water displaces a weight of water equal to its own weight. Remembering that, it is easy to deduce the following definitions for displacement tonnages:

Displacement light is the weight of the ship and its machinery and outfit, but without fuel, water, stores, crew, or cargo.

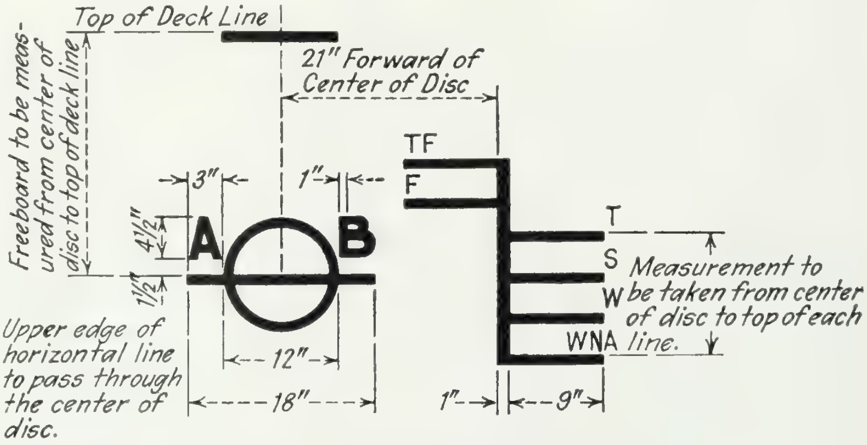
Displacement heavy, often called *load line displacement,* is the weight of the ship plus her contents when she is loaded so that her allowable load line is at the water surface. These two figures are expressed in long tons, and it is to be noted that *displacement heavy* is for ordinary cargo carriers, the largest tonnage figure.

Deadweight total is the weight in long tons of the cargo, fuel, water, stores, crew, passengers and baggage. This figure is equal to displacement heavy minus displacement light.

Deadweight cargo is the weight in long tons of the cargo that can be safely loaded into the vessel in addition to the fuel, water, stores, and crew. This cargo weight will bring the hull down in the water to her legal load water line.

Total deadweight was made a very important figure by the practice of the U. S. Shipping Board during and since World War I. All of their reports were based on that measurement, and it came to be regarded as a standard measure for many phases of shipbuilding.

At least one of these, *cost per deadweight ton,* is still used as a basis of comparison for shipyard efficiency and vessel costs. A much fairer basis for such comparison would be *cost per light displacement ton.*


Top of Deck Line
21" Forward of Center of Disc
Freeboard to be measured from center of disc to top of deck line
3"
1"
4½"
1½"
A
B
TF
F
T
S
W
WNA
Measurement to be taken from center of disc to top of each line.
Upper edge of horizontal line to pass through the center of disc.
12"
18"
1"
9"

LOAD-LINE MARKINGS FOR SEAGOING VESSELS

Gross tonnage is the cubic foot measurement of all the space inclosed by the hull and its superstructures. It is expressed in units of 100 cubic feet. There are certain artificial rules for taking this measurement which have evolved through the experience of several centuries. These differ slightly in various marine countries, and are matters of maritime law.

They also differ widely under the rules of the great canals. For passenger liners of large size, *gross tonnage* gives the highest figure of any of these tonnage measurements.

Net Tonnage is gross tonnage minus the cubic measurement of certain non-revenue-paying spaces, such as the engine room and the machinery spaces; the boiler room and fuel bunkers; the crew's quarters; store rooms, chain and paint lockers; and the fore and aft peaks.

Net tonnage is the basic figure used in assessing charges against the ship, such as: tonnage dues, canal tolls, and wharfage charges.

There are certain very artificial allowances made as deductions from gross tonnage to arrive at net tonnage. These vary considerably among the maritime nations and also among the ports and the great canals.

In measuring a cargo ship for gross tonnage, two figures for cubic capacity are used. These are known as *grain cubic* and *bale cubic,* and they are very useful commercial measurements. The *grain cubic* measurements are taken to the outside of frames (inner side of shell plating) and to the top of deck beams (lower side of deck plating), and they represent the maximum cubic capacity of the enclosed cargo spaces.

The *bale cubic* measurements are taken to the inside of the cargo battens on the frames and to the lower side of deck beams.

For bulk cargoes such as liquids, grain, sand, or gravel that flow into the spaces between the frames and beams, the figure for grain cubic is the measure of capacity.

For packaged cargoes, the bale cubic figure applies.

In a typical modern steel cargo steamer with a grain cubic of 640,000 cubic feet, the bale cubic would approximate 569,000 cubic feet.

In all maritime countries every commercial vessel is registered as to her length, beam, depth, draft, horsepower, speed, gross tonnage and net tonnage. In the United States, when a merchant vessel is completed, she is measured for tonnage, assigned a registered number, and issued a certificate of admeasurement by the custom house of her home port before she can be operated legally.

To illustrate the difference in standard practice and canal practice for tonnage measurement, compare the following figures for a modern cargo steamer:

Standard gross tonnage	6085
Standard net tonnage	3573
Panama gross tonnage	8271
Panama net tonnage	5739
Suez gross tonnage	8286
Suez net tonnage	6078

If you are reading Department of Commerce statistics, or the British press, all tonnage figures may be taken as gross unless otherwise indicated. If statistics are from Maritime Commission, or the American press, tonnage is usually total deadweight tonnage.

Registered length is the length *B. P.*, or between perpendiculars, which is taken from after side of the stern post to the forward side of the stem, usually at the level of the designed load water line.

Depth or *depth of hold* is a legal measurement defined in "Rules for Admeasurement of Tonnage," published by the U. S. Department of Commerce. It is taken on the center line amidships from the top of the beam of the tonnage deck to the top of the plating of the inner bottom.

For the ordinary cargo vessel, the tonnage deck would be the "topmost water-tight deck extending continuously throughout the whole of the vessel's length."

Draft is the vertical distance from the bottom of the keel to the load line. Scales of figures known as draft marks are set on each side of the vessel, both at the bow and at the stern. Sometimes they are also placed amidships, but the bow and stern draft marks are required by law. These figures must be exactly six inches high from bottom to top, and they are placed so that each figure refers to the draft in feet measured from the bottom line of the keel to the bottom line of the figure. If the water is half way up the figure 12, then the draft would be 12 feet, 3 inches; if it is up to the top of 12, the draft is 12 feet, 6 inches.

Load line. We have frequently mentioned this term. It is a line the position of which on the side of a vessel is legally established by an International Load Line Treaty, and by appropriate legislation in all maritime countries. This line maintains safe *freeboard,* which is the height of the highest complete watertight deck above the surface of the water.

The *Plimsoll Marks,* or International Load Line marks are set on the side of all ocean-going vessels by the Bureau of Marine Inspection of the U. S. Coast Guard, or by the American Bureau of Shipping with the approval of the Coast Guard.

These marks are shown in the illustration herewith. Every line is exactly one inch thick. The circle or disk has its center at the maximum allowable summer draft (the lowest allowable summer freeboard). The line across the circle must be 18 inches long and must be set with its upper elge intersecting the center of the circle. The deck line shown must be set with its upper edge at top edge of the plating covering the upper complete watertight deck. Since this deck line is fixed by the construction of the hull, the position of all the lines in the Plimsoll mark are measured vertically downward from its upper edge.

The lines indicating maximum load line for seasons and locational zones are all to be set along a vertical line which must be placed 21 inches forward of the center of the circle. Notice that the lines running forward from this vertical line indicate allowable load lines for salt water, and those running aft refer to fresh water loadings. These lines are all exactly nine inches long.

The initials beginning at the bottom indicate:

W. N. A.—Winter North Atlantic Load Line.

W.—Winter Load Line.

S.—Summer Load Line.

T.—Tropical Load Line.

F.—Fresh Water Load Line.

T. F.—Tropical Fresh Water.

You will remember that in our first installment, we learned that 35 cubic feet of salt water weighs one long ton (2240 lbs.), and that it takes approximately 36 cubic feet of fresh water to weigh one long ton. So that if a seagoing vessel were to be loaded in a fresh water river port down to her F. line, when she got out to see, she would be approximately at her S line.

These markings are called Plimsoll because Samuel Plimsoll, a coal merchant of London, became convinced about 1855 that many of the losses at sea were due to overloading of ships. He went into politics to correct this and was elected a member of Parliament in 1868. In 1876, he succeeded in getting a Merchant Shipping Act passed which regulated loading of ships. In 1890 the responsibilities for fixing load lines under this act was placed with the Board of Trade. In 1929 an International Convention for Safety of Life at Sea adopted general international regulations for load lines. These regulations with suitable minor changes have now been made part of the maritime law in every maritime nation.

Twenty-one
TRAINING SUGGESTIONS

When Pacific Marine Review started this training program section, it was with a sincere desire to be helpful to the many large and somewhat uncoordinated training schools and courses that had sprung up all over the country almost over night. We are very glad that our efforts to maintain a forum for exchange of constructive ideas are being appreciated.

One very active training leader, whose work is largely concerned with foremen and supervisors in ship construction, put it squarely up to the classes under his charge that they should use the forum thus offered. This brought out the following very constructive suggestions, which we hope will excite comment and discussion. Note that every one of these suggestions is directed toward improvement of the whole training effort and not toward any selfish individual or class aims. Each of these suggestions could easily be expanded into an article of two or more pages.

Suggestions for Better Training

1. A periodic conference of all training officers to share progress ideas.

2. A directory of training officers and training centers.

3. An arrangement for pooling sound films; a directory of available films.

4. The preparation of educational slides of the various parts of ships,

particularly the machinery elements, to speed up elementary conceptions. The Office of Education at Washington has been approached on this subject. Blackboard sketching is far too slow.

5. A study of the coordination of the aircraft industry in Southern California and its possible application to the Bay area shipping industry.

6. The publication of a journal similar to "Wings" for the distribution of advanced articles to all foremen and supervisors and others concerned.

7. Periodic conferences of the leading foremen in each craft in the Bay area for the exchange of progress items.

8. The development of the Mechanics Institute as a center of research and access to all the leading shipbuilding journals of the allied nations. At present these are scattered among some ten libraries.

9. A cooperative effort among training officers and others in a system of planning the publication of texts for training classes, this to be done in cooperation with the work of the State schedule.

10. The development of better library facilities at each yard for workers. The use of private circulating libraries, accessible to the men.

11. The development of a broad and more intensive system of training using the best values of each, for common increase.

12. The rating of private schools. A system of evaluation of training efforts.

13. Bibliography of the best outstanding texts. A complete collection at one center.

14. A center for conference gatherings.

15. Conference provisions for forecasting future needs and the working out of methods where a better balance of workers can be voluntarily set among the plants.

16. Provision for hot night lunches. Better and more accessible food in all the yards.

17. Plans for pooling repair gangs in the event of serious emergency, such as air raids, fires or other large casualty. In spite of the remote aspects of this, we should be ready.

18. Arrangements for the loan or sale at cost of materials needed in some emergency by any one plant under urgent reason.

19. The use of journals like the PACIFIC MARINE REVIEW for pooling suggestions for common good. Furtherance of subscription by ship workers to such journals.

20. To save time of foremen and supervisors in this increase of less fit new personnel, and with the probable resulting increase of difficulties in handling these newcomers, the consideration of detailing assistants to personnel officers as trouble shooters, not for material cases, but for mental and personal problems. This may sound a bit extreme, but the time of the remaining plant instructors is going to be made increasingly valuable. The number of such cases may pile up. To send them to a trained assistant may be worth the cost and more.

21. In general to stop competing with each other and spend our time in coordinated competition with our enemies.

U. C. Marine Course

The University of California War Training Office is offering several courses, starting in October and November, for both in-service personnel and men and women about to enter the shipbuilding industries.

Beginning on October 15, a series of fourteen two-hour lectures on *Marine Ventilation* will be held on the Berkeley campus—to provide the design and operating engineer with the fundamentals of air conditioning and ventilation as used in modern marine service. Applications to both merchant and naval vessels will be considered. The course is open to high school graduates, or equivalent, who are now employed in the armed forces or a vital war industry.

To prepare marine draftsmen for employment with shipbuilding companies in the Stockton and San Francisco Bay areas, the ESMWT (Engineering, Science and Management War Training) program has scheduled three classes in *Marine Drafting*—one to meet in Stockton, beginning October 12; the second, on the University campus at Berkeley, beginning October 20; and the third to begin in Mill Valley, Marin County, on November 16. All three sections will meet two nights a week from 7 to 10 p. m.

Beginning on November 10, 11 and 12, three sections of a course in *Geometry of Shipbuilding* will be given. The 20-weeks' course, meeting one night a week, 7-9:30 p. m., on the University campus, is designed to enable men now employed in the shipbuilding field to use the fundamental principles of projection in the solution of three-dimensional problems.

All war training courses are tuition-free, and are sponsored by the U. S. Office of Education. For further information, write or call War Training office, 201 California Hall, University of California.

Chipper's Pocket Manual

Roy R. Hunter of Long Beach, presently engaged as a chipper in the Wilmington shipyard of the **Consolidated Steel Corporation,** has written a booklet on the art of chipping. It is an attractively-bound manual, illustrated with many cuts of chipping tools and their use.

Consolidated is impressed and is said to have ordered 400 copies for their training school. Interest is widespread, bringing inquiry from many sources including the U. S. Navy.

This is believed to be the only book of its kind written by a chipper actually working at his trade. It is well written in an easily-read style.

It sets an example that might be profitably followed by the writers in some of the other shipyard crafts. Come on, you shipfitters—welders—burners — pipe fitters — marine machinists.

Book Review

Navy Diver, by Gregor Felsen; 220 pages; bound in red buckram with black stampings; published by E. P. Dutton & Co., New York. Price $2.00.

This is a story of a farm boy who joined the Navy and was trained as a Navy diver, and of the part he played in the present war. The book has Navy approval as giving a very authentic picture of the training of Navy divers and of their life aboard ship. Calculated to make any red-blooded American lad want to enlist in the U.S. Navy.

TEMPIL° PREHEATING CHART

Copyright 1941, Tempil Corporation

A COPY of this convenient and useful wall chart (over twice the size of this reproduction) for welders can be obtained without cost by any responsible executive or technician who requests it on his company's letterhead from the Tempil Corporation, 132 West 22nd Street, New York, N. Y.

METAL GROUP	METAL DESIGNATION	APPROXIMATE COMPOSITION — PERCENT								METAL DESIGNATION	RECOMMENDED PREHEAT	USE THESE TEMPILS OR TEMPILSTIKS
		C.	Mn.	Si.	Cr.	Ni.	Mo.	Cu.				
PLAIN CARBON STEELS	PLAIN CARBON STEEL	BELOW .20								PLAIN CARBON STEEL	UP TO 200°F	200
	PLAIN CARBON STEEL	.20-.30								PLAIN CARBON STEEL	200°F-300°F	200-300-400
	PLAIN CARBON STEEL	.30-.45								PLAIN CARBON STEEL	300°F-500°F	300-400-500
	PLAIN CARBON STEEL	.45-.80								PLAIN CARBON STEEL	500°F-800°F	500-600-700-800
CARBON MOLY STEELS	CARBON MOLY STEEL	.10-.20					.50			CARBON MOLY STEEL	300°F-500°F	300-400-500
	CARBON MOLY STEEL	.20-.30					.50			CARBON MOLY STEEL	400°F-600°F	400-500-600
	CARBON MOLY STEEL	.30-.35					.50			CARBON MOLY STEEL	500°F-800°F	500-600-700-800
MANGANESE STEELS	SILICON STRUCTURAL STEEL	.35	.80	.25						SILICON STRUCTURAL STEEL	300°F-500°F	300-400-500
	MEDIUM MANGANESE STEEL	.20-.25	1.0-1.75							MEDIUM MANGANESE STEEL	300°F-500°F	300-400-500
	SAE T 1330 STEEL	.30	1.75							SAE T 1330 STEEL	400°F-600°F	400-500-600
	SAE T 1340 STEEL	.40	1.75							SAE T 1340 STEEL	500°F-800°F	500-600-700-800
	SAE T 1350 STEEL	.50	1.75							SAE T 1350 STEEL	600°F-900°F	600-700-800-900
	12% MANGANESE STEEL	1.25	12.0							12% MANGANESE STEEL	USUALLY NOT REQUIRED	
HIGH TENSILE STEELS (SEE ALSO STEELS BELOW)	MANGANESE MOLY STEEL	.20	1.65	.20			.35			MANGANESE MOLY STEEL	300°F-500°F	300-400-500
	JALTEN STEEL	.35 MAX.	1.50	.30				.40		JALTEN STEEL	400°F-600°F	400-500-600
	MANTEN STEEL	.30 MAX.	1.35	.30				.20		MANTEN STEEL	400°F-600°F	400-500-600
	ARMCO HIGH TENSILE STEEL	.12 MAX				.50 MIN.	.05 MIN.	.35 MIN.		ARMCO HIGH TENSILE STEEL	UP TO 200°F	200
	DOUBLE STRENGTH #1 STEEL	.12 MAX.	.75			.50-1.25	.10 MIN.	.50-1.50		DOUBLE STRENGTH #1 STEEL	300°F-600°F	300-400-500-600
	DOUBLE STRENGTH #1A STEEL	.30 MAX.	.75			.50-1.25	.10 MIN.	.50-1.50		DOUBLE STRENGTH #1A STEEL	400°F-700°F	400-500-600-700
	MAYARI R STEEL	.12 MAX.	.75	.35	.2-1.0	.25-.75		.60		MAYARI R STEEL	UP TO 300°F	200-300
	OTISCOLOY STEEL	.12 MAX.	1.25	.10 MAX.	.10 MAX.			.50 MAX.		OTISCOLOY STEEL	200°F-400°F	200-300-400
	NAX HIGH TENSILE STEEL	.15-.25		.75	.60	.17	.15 MAX.	.25 MAX.	Zr. .12	NAX HIGH TENSILE STEEL	UP TO 300°F	200-300
	CROMANSIL STEEL	.14 MAX.	1.25	.75	.50					CROMANSIL STEEL	300°F-400°F	300-400
	A. W. DYN-EL STEEL	.11-.14						.40		A. W. DYN-EL STEEL	UP TO 300°F	200-300
	CORTEN STEEL	.12 MAX.		.25-1.0	.5-1.5	.55 MAX.		.40		CORTEN STEEL	200°F-400°F	200-300-400
	CHROME COPPER NICKEL STEEL	.12 MAX.	.75		.75	.75		.55		CHROME COPPER NICKEL STEEL	200°F-400°F	200-300-400
	CHROME MANGANESE STEEL	.40	.90		.40					CHROME MANGANESE STEEL	400°F-600°F	400-500-600
	YOLOY STEEL	.05-.35	.3-1.0			1.75		1.0		YOLOY STEEL	200°F-600°F	200-300-400-500-600
	HI-STEEL	.12 MAX.	.6	.3 MAX.		.55		.9-1.25		HI-STEEL	200°F-500°F	200-300-400-500
NICKEL STEELS	SAE 2015 STEEL	.10-.20				.50				SAE 2015 STEEL	UP TO 300°F	200-300
	SAE 2115 STEEL	.10-.20				1.50				SAE 2115 STEEL	200°F-300°F	200-300
	2½% NICKEL STEEL	.10-.20				2.50				2½% NICKEL STEEL	200°F-400°F	200-300-400
	SAE 2315 STEEL	.15				3.50				SAE 2315 STEEL	200°F-500°F	200-300-400-500
	SAE 2320 STEEL	.20				3.50				SAE 2320 STEEL	200°F-500°F	200-300-400-500
	SAE 2330 STEEL	.30				3.50				SAE 2330 STEEL	300°F-600°F	300-400-500-600
	SAE 2340 STEEL	.40				3.50				SAE 2340 STEEL	400°F-700°F	400-500-600-700
MEDIUM NICKEL CHROMIUM STEELS	SAE 3115 STEEL	.15			.60	1.25				SAE 3115 STEEL	200°F-400°F	200-300-400
	SAE 3125 STEEL	.25			.60	1.25				SAE 3125 STEEL	300°F-500°F	300-400-500
	SAE 3130 STEEL	.30			.60	1.25				SAE 3130 STEEL	400°F-700°F	400-500-600-700
	SAE 3140 STEEL	.40			.60	1.25				SAE 3140 STEEL	500°F-800°F	500-600-700-800
	SAE 3150 STEEL	.50			.60	1.25				SAE 3150 STEEL	600°F-900°F	600-700-800-900
	SAE 3215 STEEL	.15			1.00	1.75				SAE 3215 STEEL	300°F-500°F	300-400-500
	SAE 3230 STEEL	.30			1.00	1.75				SAE 3230 STEEL	500°F-700°F	500-600-700
	SAE 3240 STEEL	.40			1.00	1.75				SAE 3240 STEEL	700°F-1000°F	700-800-900-1000
	SAE 3250 STEEL	.50			1.00	1.75				SAE 3250 STEEL	900°F-1100°F	900-1000-1100
	SAE 3315 STEEL	.15			1.50	3.50				SAE 3315 STEEL	500°F-700°F	500-600-700
	SAE 3325 STEEL	.25			1.50	3.50				SAE 3325 STEEL	900°F-1100°F	900-1000-1100
	SAE 3435 STEEL	.35			.75	3.00				SAE 3435 STEEL	900°F-1100°F	900-1000-1100
	SAE 3450 STEEL	.50			.75	3.00				SAE 3450 STEEL	900°F-1100°F	900-1000-1100
MOLY BEARING CHROMIUM AND CHROMIUM NICKEL STEELS	SAE 4140 STEEL	.40			.95		.20			SAE 4140 STEEL	600°F-800°F	600-700-800
	SAE 4340 STEEL	.40			.65	1.75	.35			SAE 4340 STEEL	700°F-900°F	700-800-900
	SAE 4615 STEEL	.15				1.80	.25			SAE 4615 STEEL	400°F-600°F	400-500-600
	SAE 4630 STEEL	.30				1.80	.25			SAE 4630 STEEL	500°F-700°F	500-600-700
	SAE 4640 STEEL	.40				1.80	.25			SAE 4640 STEEL	600°F-800°F	600-700-800
	SAE 4820 STEEL	.20				3.50	.25			SAE 4820 STEEL	600°F-800°F	600-700-800
LOW CHROME MOLY STEELS	2% Cr.-½% Mo. STEEL	UP TO .15			2.0		0.5			2% Cr.-½% Mo. STEEL	400°F-600°F	400-500-600
	2% Cr.-½% Mo. STEEL	.15-.25			2.0		0.5			2% Cr.-½% Mo. STEEL	500°F-800°F	500-600-700-800
	2% Cr.-1% Mo. STEEL	UP TO .15			2.0		1.0			2% Cr. 1% Mo. STEEL	500°F-700°F	500-600-700
	2% Cr.-1% Mo. STEEL	.15-.25			2.0		1.0			2% Cr. 1% Mo. STEEL	600°F-800°F	600-700-800
MEDIUM CHROME MOLY STEELS	5% Cr.-½% Mo. STEEL	UP TO .15			5.0		0.5			5% Cr.-½% Mo. STEEL	500°F-800°F	500-600-700-800
	5% Cr.-½% Mo. STEEL	.15-.25			5.0		0.5			5% Cr.-½% Mo. STEEL	600°F-900°F	600-700-800-900
	8% Cr.-1% Mo. STEEL	.15 MAX.			8.0		1.0			8% Cr.-1% Mo. STEEL	600°F-900°F	600-700-800-900
PLAIN HIGH CHROMIUM STEELS	12-14% Cr. TYPE 410	.10			13.0					12-14% Cr. TYPE 410	300°F-500°F	300-400-500
	16-18% Cr. TYPE 430	.10			17.0					16-18% Cr. TYPE 430	300°F-500°F	300-400-500
	23-30% Cr. TYPE 446	.10			26.0					23-30% Cr. TYPE 446	300°F-500°F	300-400-500
HIGH CHROME NICKEL STAINLESS STEELS	18% Cr 8% Ni. TYPE 304	.07			18.0	8.0				18% Cr. 8% Ni. TYPE 304	USUALLY DO NOT REQUIRE PREHEAT BUT IT MAY BE DESIRABLE TO REMOVE CHILL	200
	25-12 TYPE 309	.07			25.0	12.0				25-12 TYPE 309		
	25-20 TYPE 310	.10			25.0	20.0				25-20 TYPE 310		
	18-8 Cb. TYPE 347	.07			18.0	8.0			Cb. 10XC	18-8 Cb. TYPE 347		
	18-8 Mo. TYPE 316	.07			18.0	8.0	2.5			18-8 Mo. TYPE 316		
	18-8 Mo TYPE 317	.07			18.0	8.0	3.5			18-8 Mo. TYPE 317		
IRONS	CAST IRON									CAST IRON	700°F-900°F	700-800-900
	Ni RESIST									Ni RESIST	500°F-1000°F	500-700-900-1000
NON FERROUS	ALUMINUM									ALUMINUM	500°F-700°F	500-600-700
	MONEL									MONEL	200°F-300°F	200-300
	NICKEL									NICKEL	200°F-300°F	200-300
	INCONEL									INCONEL	200°F-300°F	200-300
	COPPER									COPPER	500°F-800°F	500-600-700-800
	ZINC									ZINC	200°F-300°F	200-300

PREHEATING PRIOR TO WELDING WILL

1. Eliminate the danger of formation of cracks.
2. Reduce Hardness.
3. Reduce Distortion.
4. Reduce or prevent Shrinkage Stresses.

THE NEED FOR PREHEATING INCREASES AS THE FOLLOWING FACTORS ARE CHANGED

1. The larger the mass being welded.
2. The lower the temperature of the pieces being welded.
3. The lower the atmospheric temperature.
4. The smaller the weld rod in diameter.
5. The greater the speed of welding.
6. The higher the Carbon content of the steel.
7. The higher the Manganese content.
8. The greater the Alloy content in air hardening steels.
9. The more the air hardening capacity of the steel.
10. The greater the difference in mass between the two pieces being joined.
11. The more complicated the shape or section of the parts.

TEMPILS OR TEMPILSTIKS ARE ALSO RECOMMENDED FOR INDICATING TEMPERATURES IN —

SURFACE WELDING

HARD FACING

OVERLAYING FOR CORROSION RESISTANCE

TORCH OR FLAME CUTTING

FLAME CONDITIONING OF SEMI-FINISHED STEEL

HEAT TREATMENT

LOCAL HEATING AND COOLING

PIPE BENDING

SHEARING OF BAR STEEL

STRAIGHTENING HARDENED PARTS

SHRINKING ONE PART ON ANOTHER

RECONDITIONING REFINERY STILL TUBES

REPAIR WELDING COSTLY DIES

TARRING CAST IRON MOULDS

TARRING CAST IRON PIPE

STACK TEMPERATURES

BRAZING

SOLDERING

FABRICATION OF NON FERROUS METALS

THE LORIMER DIESEL ENGINE IS BUILT IN THIS WELL-LIGHTED, MODERN PLANT, WEST OAKLAND, CALIFORNIA

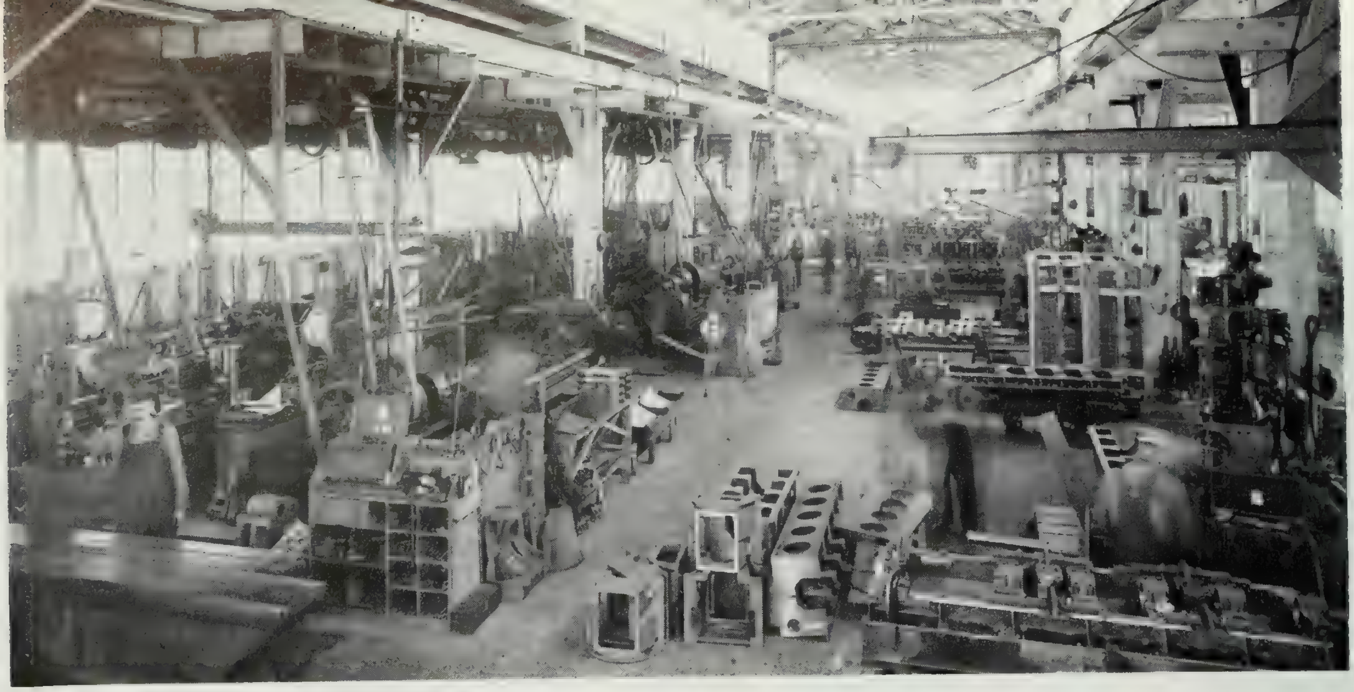
The Lorimer Diesel Engine

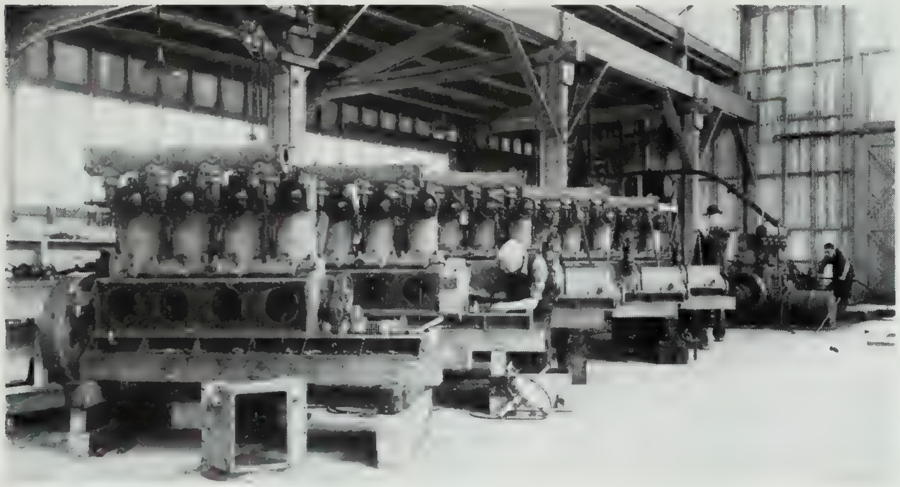
PRODUCING POWER FOR THE ALLIES AFLOAT AND ASHORE

THE LORIMER DIESEL Engine Company of Oakland has a very interesting background. It was organized in 1934, in the midst of the depression, by one of the pioneer internal combustion engine developers of the Pacific Coast. This man saw the need for a comparatively low-power, heavy-duty marine engine that would have the characteristics required by the small fishing boat operators—simplicity, ruggedness, reliability, and the *ability* to run for long periods at low speeds for trolling. He persuaded one or two other pioneer Pacific Coast diesel men to become associated with him in this new venture.

An engine of this type was developed and, after some years of experimental work, was built to order for San Francisco Bay fishermen. In 1939 the company was employing, more or less regularly, some 15 mechanics, and had 7500 square feet of shop area.

In 1940 the demand for diesel engines by the warring nations led to a sudden expansion of personnel and shop area, and also an addition of more sizes and features to the lines of engines built.





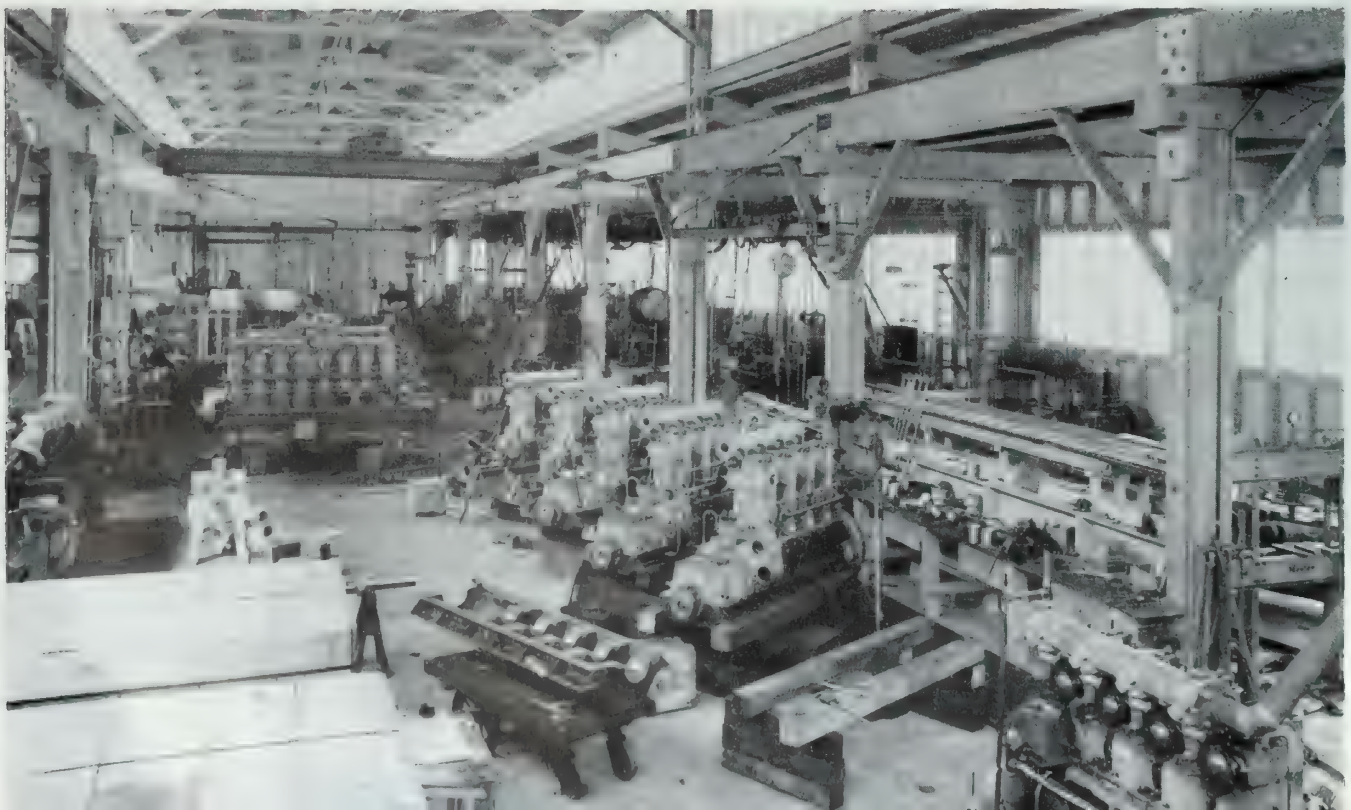
In the Shops of the Lorimer Diesel Engine Company

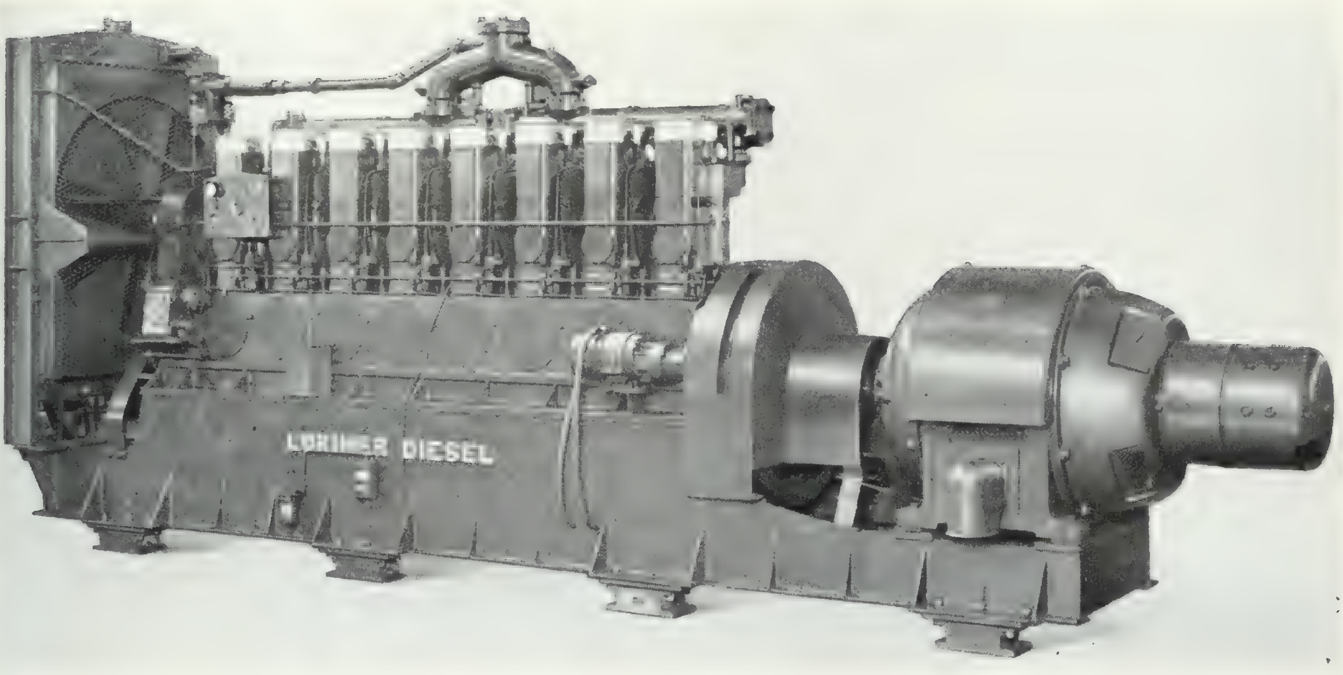
●

UPPER: A general view of the main bay of the machine and erecting shop showing engine parts in process of manufacture.

LEFT: A corner of the erecting bay showing a group of engines under erection and progressing toward the test stand.

LOWER: A general view showing many engines receiving finishing touches before test runs.





MANY OF THESE sturdy self-contained emergency generating sets are being installed on vessels of the U. S. Maritime Commission and the U. S. Navy. The engine is an 8-cylinder, electric-starting diesel that delivers 125 bhp and is directly connected to and mounted on the same bed plate with a 75-kw dc electric generator. This diesel starts from cold in less than 10 seconds.

Our illustrations show the exterior and the interior of the shop now occupied by the Lorimer Diesel Engine Company in a very convenient location at the corner of Wood and 16th Street, Oakland, California.

Here the firm employes 50 men and is currently turning out some 10 engines a month. All of the key men in the shops are old-timers in the building of diesel engines. Practically every man is an all-around engine machinist who can not only set up and operate any of the machines to finish the various parts but can also erect the engine, test the engine, and service the engine in any application.

The casting, forging and welding operations are subcontracted.

All Lorimer engines are of the four-stroke cycle, solid-injection type. Three cylinder sizes are in production. These are: 5¾″ x 7½″, or 10 hp per cylinder; 6½″x8½″, or 15 hp per cylinder; and 7½″ x 9″, or 25 hp per cylinder.

These engines run at 600 to 800 rpm top speed with a maximum piston speed of 1200 f p m; Cylinders, cylinder heads, and pistons are of special formula molybdenum iron castings.

Cylinders are cast separate, and cylinder heads are removable. All water jackets are designed for ample flow of cooling water to keep all parts at proper operating temperatures. Combustion space in cylinder heads and piston top is accurately machined to a designed volume and shape.

Valves are located in the cylinder head. The exhaust valves are of "Fercromel" and the inlet valves of SAE 4140. Accurately machined all over, large in diameter, with ample bearing, and fitted with heavy, non-fatigue valve springs, these valves give long-time satisfactory service.

Wrist pin, connecting rod, timing gears, cam shaft, cams and rocker arms are all designed with ample bearing and wearing surfaces to keep specific pressures and strains well within safe limits and to insure long and satisfactory service. Forced-feed lubrication is used on all bearings.

The base and the center frame are fabricated by welding from rolled and cast steel and form a backbone for the engine that is rigid, strong, and comparatively light weight.

It will be noted in the illustration that the center frame has large access doors (both sides) for maintenance work on the reciprocating and rotating parts.

This engine has the approval of both the U. S. Maritime Commission and the U. S. Navy, and is one of the few having no difficulty in passing the extreme Navy requirement of starting from cold condition in 10 seconds.

Production at present is 100 per cent war, either for Lend-Lease, U. S. Navy, or U. S. Maritime Commission.

The output for the Navy is largely 8-cylinder, 170 horsepower propulsion units; and that for Maritime Commission is the generating set shown in our illustration, which is composed of a 125-hp engine driving a 75-kw dc generator. This set is used for emergency light and power on many of the Commission ships. It is electric starting and floats on the main switchboard and a battery in such fashion that when the main generator fails, the emergency generator is automatically cut in to take care of certain circuits.

Lorimer Engine Company is producing good diesel engines for the hard, rough service of war and is proud for the duration to be thus serving its country. One member of the firm is in the Navy on sea service for the duration.

When the war is over, Lorimers will be producing good diesel engines for economical and satisfactory peacetime service.

Standard Oil Tankers

Are Safe Tankers

FOR MANY YEARS, the splendid tankship fleet of the Standard Oil Company of California has transported millions of barrels of highly inflammable petroleum products without serious explosion or fire. The Marine Department of this great firm has constantly and carefully studied every possible method for making tankers more and more safe against fire hazards.

The major hazard is the highly inflammable and explosive mixtures of free air and petroleum vapors that form over petroleum and its distillates whenever the cargo tanks are partially filled.

Some years back, Standard Oil of California decided to make the formation of such explosive mixtures impossible by filling these spaces at the tops of cargo tanks with inert gas that contained no free oxygen.

On any steam-drive tanker, there are tremendous quantities of gas (the product of the combustion of fuel oil in the furnaces of the boilers) constantly passing up the stack. This gas is inert, in fact is largely the same chemical composition as the gas used in some fire extinguishers, so that when cooled, it is an ideal inert medium for filling the tank spaces to prevent fire or explosion.

After satisfactory piping, cooling, and safety arrangements had been worked out, the fleet of tankers was equipped with this system. Experience and research have suggested certain improvements, and these have been incorporatd from time to time.

This flue gas system, as now installed, is shown diagrammatically in sketches and legends on the facing page. It will be noticed that the gases from the stack, which are usually at a temperature around 350° F., are taken first into a flue gas cooler where the temperature is reduced to approximately that of the sea water.

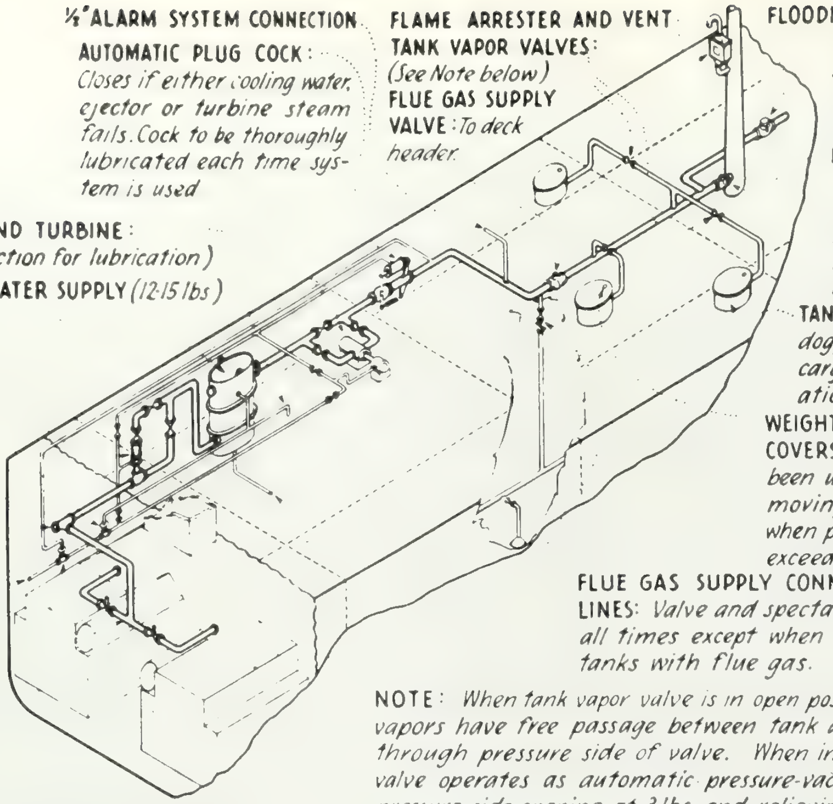
From this tank, the flue gas is sucked into the upper side of cargo tanks by the vacuum caused when the cargo is discharged. Note that a turbine-drive blower is included in the piping arrangements on the discharge side of the cooler, and a steam ejector in the piping arrangements on the inlet side. By these means, empty cargo tanks may be filled at will with inert flue gas.

Thus a tanker fitted with this system by the act of unloading fills her tanks with flue gas, and on the voyage home, no fire is possible in the cargo spaces, the whole of the tank space being filled with an incombustible gas.

When she arrives at her loading port and the tanks are filled with petroleum products, the inert gas driven out of the tank vents is a nonexplosive mixture and practically incombustible. However, in the loading process, it might become mixed with vapors from the petroleum and with sufficient air to make these explosive, so the vent piping is carried up through the hollow mast to a flame arrester and vent at a considerable height above the deck.

Again, when tanks are being cleaned or repaired, the flue gas system operates in the interest of complete safety. By using the blower or steam ejector to completely fill the empty cargo tanks with flue gas, all explosive vapor mixtures can be driven out. The usual wind-sails or a fresh-air blower can then be used to drive out the flue gas and fill the tanks with fresh air. Thus, the entire operation of freeing a tank from vapors, so that it can be safely entered for cleaning and/or repairs, may be carried out with freedom from the hazard of explosive vapors.

Handled properly by a well-trained crew, the flue-gas system as installed on the tankers of the Standard Oil Company of California practically eliminates the explosion hazard in tanker operation and maintenance.



½" ALARM SYSTEM CONNECTION

AUTOMATIC PLUG COCK: *Closes if either cooling water, ejector or turbine steam fails. Cock to be thoroughly lubricated each time system is used*

FLAME ARRESTER AND VENT

TANK VAPOR VALVES: *(See Note below)*

FLUE GAS SUPPLY VALVE: *To deck header.*

FLOODING RELIEF VALVE: *See that guide bolts are slack and valve is free to lift before each loading*

MAST SHUT-OFF VALVE: *To be open at all times except as indicated under Sec. 2- Discharging Cargo or Ballast.*

BLOWER AND TURBINE: *(See instruction for lubrication)*

COOLING WATER SUPPLY *(12-15 lbs)*

COOLER

TANK HATCHES: *To be dogged down during cargo handling operations*

EJECTOR

DIAPHRAGM OPERATED STEAM VALVE

FRESH AIR INTAKE: *For ventillating empty tanks*

WEIGHTED ULLAGE HOLE COVERS: *When cover has been unfastened (by removing pin) it will lift when pressure inside tank exceeds 2 lbs gauge.*

STEAM SUPPLY: *To ejector and turbine.*

FLUE GAS SUPPLY CONNECTION TO CARGO LINES: *Valve and spectacle to be closed at all times except when charging empty tanks with flue gas.*

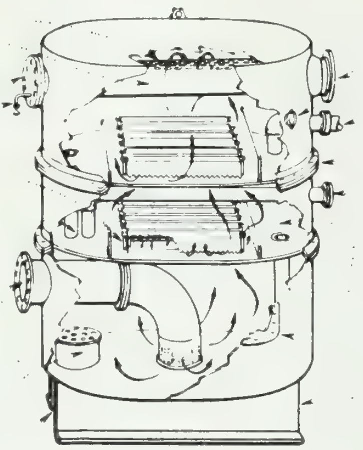
PRESSURE REGULATOR

FLUE GAS INTAKE

NOTE: *When tank vapor valve is in open position, flue gas or vapors have free passage between tank and deck header through pressure side of valve. When in closed position valve operates as automatic pressure-vacuum relief valve; pressure side opening at 3 lbs. and relieving to header, vacuum side opening at 1½ lbs. and drawing free air through underside of valve body. Vacuum portion of valve is operative at all times (See drawing of valve for details.)*

COOLING WATER DRAIN: *(Overboard)*

FLUE GAS COOLER



Slotted Holes

Dry Pipe (removable)

Blind Flange for removing Dry Pipe

Drain

Gas is forced beneath perforated plate and bubbles up through layer of water.

Downpipe carrying water is sealed by water against entry of gas from lower compartment.

INLET- HOT GAS - OR HOT GAS AND STEAM

Water Strainer

WATER OUTLET

GAS OUTLET TO TANKS

Sight Glass

WATER INLET

Plates may be removed for cleaning or replacement by taking off top sections.

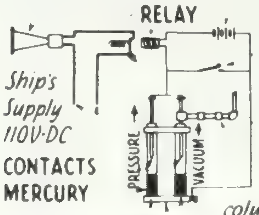
WATER INLET: *Blind flange, alternate connection in case of priming.*

Gas and water separate here before water enters downpipe.

Manhole

15" [Base

ALARM SIGNAL WIRING DIAGRAM



ALARM HORN

RELAY

DRY CELLS

TEST BUTTON: *Test alarm system with this button before starting flue gas system.*

Ship's Supply 110V-DC

FLAME ARRESTER: *Keep holes free from dirt.*

CONTACTS

MERCURY

If alarm sounds when this column is up, the main header is under excessive vacuum.

If alarm sounds when this column is up, the main header is under excessive pressure.

MERCURY MANOMETER: — *To sound alarm when either pressure or vacuum become excessive.*

News FROM THE PACIFIC NORTHWEST

by Daniel L. Pratt

Eight War Vessels Launched Labor Day

Shipworkers and employees both joined in a joint celebration of Labor Day on Puget Sound by launching eight war vessels. Launchings occurred at six different shipyards. Many thousands of shipyard workers and their families listened to the brief speeches, cheered as each ship struck the water, then returned to their work because new keels were laid on the ways almost as the other ships were launched.

First of the launchings was across the lake from Seattle at the **Lake Washington Shipyards** at Houghton, where the sixth of a fleet of seaplane tenders under construction was christened *Oyster Bay*.

Mrs. W. K. Harrill, wife of Rear-Admiral Harrill, who was commanding officer of the Sand Point Naval Air station, acted as sponsor, and the co-sponsor was **Mrs. Seth B. Williamson,** wife of a swing-shift crane operator in the yard.

Later in the afternoon the destroyer U. S. S. *Welles* was launched from the yard of **Seattle-Tacoma Shipbuilding Corp.'s** Seattle plant. She was the tenth destroyer to go down the ways at this yard. This ceremony was made very impressive, with planes flying overhead, bands playing and talks by the Governor, Mayor, yard officials and some of the workers. **Ensign H. A. Lincoln** acted as master of ceremonies, and **Mrs. J. A. Brainard** of South Coventry, Conn., great granddaughter of Gideon Welles, Secretary of the Navy under Abraham Lincoln, acted as sponsor.

At the **Associated Shipbuilders'** yard at Seattle, two mine sweepers which were destined for British Navy service, and which had been built tandem-fashion on the same ways, slid into the water one after the other. Congressman **Warren G. Magnuson** was the chief speaker, with **H. F. McCurdy** acting as master of ceremonies. The first ship to be launched was *H. M. S. Catherine,* sponsored by **Nancy Rose Taylor,** daughter of 1st Lieut. John Paul Taylor, reported missing at Bataan. The second vessel, *H. M. S. Cato,* was christened by **Frances Ann Malone,** daughter of Capt. W. J. Malone, supervisor of shipbuilding for the Navy in the 13th District.

Meantime there were two launchings in Tacoma, the naval tanker *Kern,* by the **S.-T. S. B. Corp.,** sponsored by **Mrs. L. A. Odlin,** wife of Capt. Odlin, officer in charge of the Naval Supply Depot at Seattle; and a mine sweeper built by the **Tacoma Shipbuilding Co.** and christened by **Miss Beverly Ann White,** daughter of Clarence White, hull foreman of the yard.

Bellingham had a twin launching where two 135-foot wooden mine sweepers went down the ways simultaneously in the yard of the **Bellingham Marine Railway & Shipbuilding Co.**

Oregon yards launched two sub-chasers and a mine sweeper and put down the keels of four other craft. **Commercial Iron Works of Portland** took most of the state's honors, sending two sub-chasers and a mine sweeper down the ways and laying the keels of two more. **Kruse and Banks** shipyards on Coos Bay launched the fourth, a new mine sweeper.

Restoring Sails To the Seas

Capt. Alexander Peabody, president of the Puget Sound Navigation Co., in August took up his new duties in Washington, D. C., where he will act as president of the Inter-American Navigation Corporation, an R. F. C. supported organization that will build, purchase and operate wooden auxiliary powered sailing vessels in the Western Hemisphere trade. Before leaving he stated that the ships will be from 250 to 300 tons. One hundred ships will be placed first in service and the fleet will be enlarged as soon as possible. He estimated that there are about 20 able schooners in the country that can be made serviceable for inter-American operation. This fleet, and those to be built, could carry coffee, sugar, cocoa and other products in this trade, thus releasing steel ships for other wartime services.

Sprinkling Systems For Seattle Wharves

The **Coast Guard** and the new Seattle port commander are much concerned over the fact that most of Seattle's docks are unprotected by sprinkling systems. They are urging that the city council pass an ordinance requiring the installation of such systems in all waterfront structures. To emphasize the danger, the Coast Guard recently took the city council on a tour of the waterfront, examining especially the underside of the docks exposed to enemy saboteur approach from the water. The full extent of the dangerous conditions revealed was apparently a revelation to the councilmen. As, a result, following a hearing then to be held within a week, the council will decide whether the present efforts of the Coast Guard in protecting the waterfront should be supplemented and made fully effective by an order requiring general installation of dock sprinkling systems.

Big Orders For Wooden Barges

The outcome of the **Maritime Commission's** call for bids on barges from wood boat builders resulted in three

Pacific Northwest builders receiving orders on twenty-six 274-foot ship-type vessels. A contract for twelve, at a cost of $6,450,000, went to the **Edlund Shipbuilding Co.** at Anacortes. Another order for eight was awarded the **Olympic Shipbuilders, Inc.** at a cost of $4,431,000, to be built at Port Angeles and the third award for six barges went to the **Larson Yards, Inc.,** Astoria.

Sound Yards Land Orders For Patrol Boats

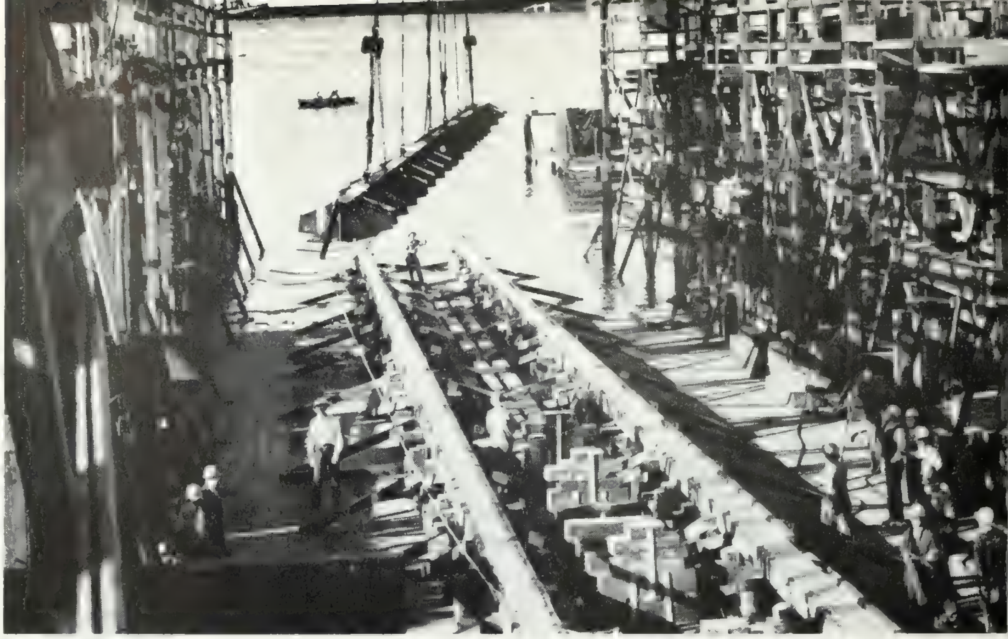
Rapid progress is being made in what is one of the most extensive small boat operations in the nation. This was the construction of fifty 50-foot patrol boats ordered by wire from Coast Guard headquarters in Washington to the Coast Guard 13th District at Seattle. These boats are being built to a plan already prepared by **M. G. Shain** of the **Trimmership Co,** which is known as their "Commodore" model. Within a few days, local builders were notified, 21 bids submitted. Six yards were selected to do the work: **Shain Mfg. Co.,** 12 boats; **Washington Boat Works,** 12 boats; **Barbee Marine Yards,** 10 boats; **Grandy Boat Works,** 8; **Olsen & Winge,** 4; **Jensen Motor Boat Corp.,** 4. All of these yards are located in Seattle, and were already engaged with a volume of construction from the Army and Navy. The job is to be completed by all the yards by the first of the year.

Marine Shorts

So much secrecy has been maintained regarding the **Army** boat-building plans that few people realize the number and variety of types of these boats now under construction in the yards of the Pacific Northwest. While the exact number of these craft under construction on the Coast has not been revealed, the number of types is quite surprising, including such types as small freighters, cargo vessels, power scows, and tugs.

* * *

On August 6, a contract was let by the Coast Guard to Northwest wood shipbuilders for 14 fifty-foot tugs. Eight more, built according to a prefabricating method, were awarded to a Portland firm who will ship the hulls in knock-down form from there to San Francisco for final assembly.



LAYING KEEL of destroyer immediately following launching of U. S. S. Wells, whose hull can be seen in upper background.

With the launching early in October of the U. S. mine sweeper *Y. M. S., 103* the **Astoria Marine Construction Co.,** Astoria, Ore., has completed its first contract for four $700,000 sweepers, and is starting the second contract for eight ships.

* * *

One of the features in connection with the Labor Day celebration at the **Commercial Iron & Steel Co.,** in addition to its launchings, was the dedication of a $1,500,000 marine railway. Size of the railway was not discussed, except that it will permit handling of as many as six vessels at one time, for painting or repairs.

* * *

Marine Short-Shorts

The national average of Liberty ships launched during August was 82.9 days from keel-laying to delivery. Oregonship, holding the record, averaged 50.2 days. . . . Shipyard workers at Seattle-Tacoma yard at Seattle have been balking at wearing numbers on the steel helmets they wear in the yard. The yard's object was to more easily keep track of the men; the workers' objection, that it would make them subject to espionage by snoopers. . . . **War Shipping Administration** conducted voluntary registration of former merchant marine seamen and officers September 8 to 18. One hundred thousand seamen and officers will be needed to man 2300 new vessels to be built by the end of 1943. . . . Two Seattle heroes who have given their lives in the present war will be honored by having new Navy escort vessels named after them. One will be the Donaldson, after **Lieut. Trose Emmet Donaldson,** and the other the Formoe after **Aviation Machinist Mate First Class Clarence Melvin Formoe.** . . . Because of traffic congestion, the three **Kaiser** yards in Portland will stagger the working hours. . . Tempo of **Oregon's** shipbuilding industry has leaped upward from 15,333 man days of work for the first six months of 1941 to 3,779,899 for the first half of 1942.

* * *

Personal Gleanings

Mme. Silwing P. C. Au, wife of the Chinese consul at Portland, was chosen to christen the Liberty freighter *William S. Rosecrans,* when she slid down the ways of the **Oregon Shipbuilding Corp.,** September 11. It was the yard's 71st freighter. . . . **H. A. Shook,** one of the deans of ship operators in the intercoastal trade is now in Seattle heading the Recruiting and Manning Organization for the Maritime Commission. . . . **Capt. John F. Granbrock,** formerly safety engineer for the Waterfront Employers' Association at Seattle, has joined the Army Transport Service, with duties in connection with the dispatching of ships. . . . **Thomas W. Thorniley,** 19-year-old son of **"Bill" Thorniley,** advertising manager for the Puget Sound Navigation Co., has joined the Coast Guard Reserve. . . . **Capt. Tom Haugen,** who has made many voyages to the fishing banks in the Wawona, does not believe that the demand for vessels of every rig and type for war service will end the days of windjammers in the fishing industry. He says that handy-sized sailing schooners are the best vessels for the codfishing trade.

News FROM THE PACIFIC SOUTHWEST

by ***K. M. Walker***

Fellows and Stewart Busy on Naval Work

The big boatbuilding yard of **Fellows and Stewart** at Wilmington is very busy building sub-chasers for the Navy, and is handling also a very considerable volume of maintenance work, repair, and conversions. W. S. A. is picking up all the suitable small craft it can find for conversion to naval and Coast Guard patrol work, and a constant stream of such craft is going through this yard for very varied and very interesting conversion and reconditioning work.

Consolidated Rolling Out C-1s

The Wilmington yard of the **Consolidated Steel Corporation** is rolling C-1 cargo steamer hulls off the ways with great regularity and is building additional outfitting dock space.

On September 7, this yard launched its 12th C-1, the Alcoa Planter. This launching and the entire program in connection therewith were handled by the personnel of the yard.

It was an Employees Family Day at Consolidated, for while the three shifts worked as usual with no let-up on production of ships, national Labor Day was celebrated by thousands of the wives and children of all workers and by the men of the off shifts, in attendance on the launching program.

The program was entirely in the hands of the workers. Rev. Gerald Feurman, a shipfitter's helper, gave the invocation after the National Anthem had been played by the Consolidated Band. This band, the workers' glee club, and several workers who rendered instrumental and vocal solos presented a very varied and popular program.

Herbert R. Kunkel, who had won the recent drawing for War Savings Bonds had therewith won the privilege of selecting a sponsor for the Labor Day launching. He selected Mrs. Kunkel. When that lady, surrounded by her three blond-haired, blue-eyed girls, aged 3½, 5½ and 7½ years, was introduced, she got a great ovation. And when those young youngsters saw their gentle mother hit this great big ship on the nose with a bottle and "knock the ship clear out into the middle of the bay"—the round-eyed looks of wonder and awe on their faces was something worth going a long way to see and a fitting climax to a great day at Consolidated.

L. A. Ship Launches Ajax

On August 22, at 6:40 p. m., **Los Angeles Shipbuilding and Drydock Corporation** launched the first ship of its present contract with the U. S. Navy. This vessel, builder's Hull No. 58, was christened Ajax by her sponsor Mrs. I. C. Johnson, wife of Admiral Johnson, attended by her daughter Mrs. A. J. Bolton as matron of honor.

We cannot (censorship) give the details of the U. S. S. Ajax, but we can say without fear of successful contradiction that she is the largest and heaviest hull ever launched into Los Angeles Harbor. Her launching was perfect in timing and smooth efficiency.

We know and appreciate the obstacles and the heart-breaking problems that have attended her construction, and we extend hearty congratulations to her builders on this successful accomplishment.

The Leading Liberty Yard

In August the **California Shipbuilding Corporation** of Wilmington, California, delivered eleven Liberty EC-2 type cargo steamers to the U. S. Maritime Commission. Among all the Liberty shipyards of the nation, the closest competitors to this record were Bethlehem-Fairfield, nine steamers delivered, and Oregon Shipbuilding Corporation, nine steamers delivered. During the same period, Calship launched 11 Libertys. This is to be her average rate—11 ships a month.

The third vessel launched in August was the steamer Peter H. Burnett. This was builder's Hull No. 55, and is the last hull of the first Maritime Commission contract with Calship. This contract was for the construction of 55 ships the last of which was scheduled for delivery on March 19, 1943. The Peter H. Burnett, last of the 55, was launched 202 days ahead of schedule.

New Executive Heads L. A. Ship

The directors of the **Los Angeles Shipbuilding and Drydock Corporation** have elected **A. F. Smith** to be president of the organization.

President Smith is a veteran Pacific Coast shipbuilder, having served as president of the Columbia River Shipbuilding Corporation from 1917 to 1921. During those years, that shipbuilding firm made some very exceptional records in building and equipping steel steamers for the U. S. Shipping Board and for private owners. During the intervening years, Mr. Smith has been connected with the iron and steel industries in Portland, being until recently president of the General Iron and Steel Works. Under his able direction, the capable organization of the Los Angeles Shipbuilding and Drydock Corporation will be producing records in ship construction and repair.

Tug Contract For Long Beach Yard

A contract for the construction of six seagoing wood tugs, design V3-S-AH2, has been awarded to the **Standard Shipbuilding Corporation** of Long Beach, California.

One hundred and fifty feet in length, the tugs can be used for deep-water work, and are being constructed primarily for towing wooden barges now being built to relieve increasing demands for cargo tonnage.

According to the terms of the contract, the first vessel must be delivered within 180 days and the last vessel in not more than 360 days.

These six vessels will be built on a fixed-sum basis at a price of $434,845.34 each.

A Double Launching

On Labor Day, the Harbor Boat Building Co. at Terminal Island, Los Angeles Harbor, launched two vital protective vessels for the Navy. These were a motor torpedo boat and a 110-foot submarine chaser. These fine, sturdy fighting ships were well advanced toward completion when launched.

New Ferry Building

The demands of the Navy Department for space occupied by the **Star & Crescent Boat Company,** who have for years been located in the small building at the foot of Broadway, San Diego, in the heart of the Naval area, and the boat company's own need for additional space for their rapidly growing business, have forced the Star & Crescent to move to new quarters at the foot of Market Street.

A handsome new ferry building has been erected at a cost of about $30,000 at the new site, which provides roomier waiting room, ticket offices, restaurant and space for the other concessions for the convenience of the public.

Supplementing the several vessels operated by the Star & Crescent in the service between North Island and San Diego is the new ferry *Juanita* which recently made her maiden run from the new ferry building. This is the company's first double-ended ferry and was launched at the **San Diego Marine Construction Company** on August 24 in a side launching. She is a 65-footer with double deck and driven by twin Cummins diesel engines of 100 hp each.

DOUBLE LAUNCHING at Harbor Boat Building Co., Terminal Island, Calif., on Labor Day. A motor torpedo boat (in front) and U. S. Navy Submarine chaser, ready to go down the ways. (Official U. S. Navy Photograph)

Dredge Lost at Point Arguello

Point Arguello, the graveyard of ships, has claimed another victim.

On August 27 the 27″ centrifugal suction dredge Los Angeles was proceeding from Santa Barbara to Morro Bay in tow of the tug Louis Black. When off Point Arguello, heavy weather was encountered and seas stove in the bulkheading at the forward end, flooding the engine room. The water-logged dredge then became unmanageable, and, in the heavy seas, soon broke up and sank in about 300 feet of water. The five-man crew put on life jackets and took to the water, where they floated for a half hour before being picked up and returned to Santa Barbara by the tug Rosalie.

The Los Angeles was built at San Pedro in 1912, and was valued at about $250,000.

New Fisheries Pier

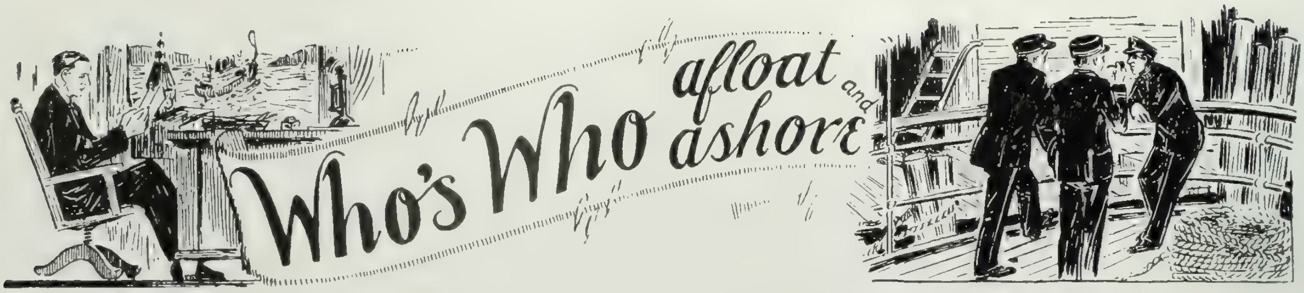
Bids are finally being called to cover the construction of the very essential, but long-delayed Fisheries Pier for the Port of San Diego. The plans as approved indicate an "L" shaped building, 145 feet long and 120 feet wide, to be built at the foot of Market Street immediately to the south of the new Star & Crescent Ferry Building. The north side of the Coast Guard pier will be used in unloading catches of fish for delivery to the fish concerns occupying the new building until such time as a new pier can be built.

The old fisheries building, located in the center of the Naval restricted zone, has had to be abandoned, but the demand of the war effort for materials has prevented construction of a complete plant to house the fish dealers. The new building will be only a skeleton, as described by Joe Brennan, Port Director, sufficient to meet the needs of the fish dealers for the duration of the war. The final revised plans eliminate all critical war materials except nails and the port commission is assured of a sufficient supply with which to complete the building.

Record Albacore Season

The all-time record albacore season is now drawing to a close with the gradual disappearance of the fish from the Southern California banks. Most of the fishing has been done by small jig boats with two- and three-man crews, and the ceiling price of $398, highest ever paid in Southern California markets, has resulted in some unusually good earnings for this type of boat. Earnings of $200 per man per day have not been out of the ordinary, and general prosperity is reflected by the fishermen who have endured through many lean years. The banks have teemed with boats from Santa Barbara to Point Loma, where the fish appeared during June for the first time in 16 years.

Mexican waters have been producing prolifically and yellow-fin tuna are more plentiful than during any season since 1930. Catches have averaged 75 tons for a ten-day trip, and, at the present price of $90 for these fish, some fine profits have been made.


Who's Who afloat and ashore

Edited by Jerry E. Scanlon

Propeller Convention Delegates

To attend the annual National Convention of the Propeller Club of the United States to be held in New York, October 15-16, the following well-known West Coast shipping executives have left for the East Coast and will not return until the end of this month:

E. Russell Lutz and **M. J. Buckley,** vice presidents of the American President Lines; **Eugene Hoffman,** APL's public relations director and secretary of the local Propeller Club; **Frazer Bailey,** executive vice president of the Matson Navigation Company; and **Charles L. Wheeler,** executive vice president of the McCormick Steamship Company.

Messrs. Lutz and Buckley will also attend the National Foreign Trade Council in Boston, October 5 to 10.

Captain A. F. Pillsbury of the marine surveying firm of Pillsbury & Martignoni, is in the East on an extended business trip. He will attend the Propeller Convention, October 15-16 in New York.

MARK M. GATES

Moss Cooperates U. S. C. G. and A. P. I.

James E. Moss, manager of the Marine Department of the Atlantic Refining Company in Philadelphia, has been appointed consultant with the American Petroleum Institute under William R. Boyd Jr., Institute president. The job is full time.

Purpose of Moss's appointment was to cooperate activities of the petroleum industry with the U. S. Coast Guard and other Governmental agencies in the solution of war tank, ship and barge problems.

The selection and appointment of Mr. Moss followed a request from **Vice Admiral R. R. Waesche,** commandant of the Coast Guard, whose duties now include most of the duties of the Bureau of Marine Inspection and Navigation, the Government office formerly responsible for licensing, vessels rules and regulations.

Pacific Coast Shipyard Man Power

D. W. Fernhout, West Coast Plant engineering chief for the U. S. Maritime Commission, predicts Pacific Coast shipyards will be employing at least 375,000 workers by the end of the year, with 150,000 engaged in San Francisco Bay shipbuilding activities.

He said that West Coast yards will build two vessels for every one produced elsewhere in the nation.

Mark Gates Honored

The new president of the American Association of Port Authorities is **Mark H. Gates,** veteran secretary of the San Francisco Board of Harbor Commissioners. The honors followed the convention held in Hamilton, Canada.

Mr. Gates has been secretary of the Harbor Board for the last fifteen years.

S. U. P. Buys Bonds

Sailors Union of the Pacific have in their treasury $65,000 in war bonds, Harry Lundberg, secretary, reports. The SUP was the first marine union to subscribe $50,000 in a lump sum for the bonds at a time when this was the maximum amount allowed to be purchased. Since then, an additional $15,000 has been expended for the same purpose.

R. M. O. Problems

There is a possibility that American seamen might be loaned to man the merchant marine of our allies, **Marshall E. Dimock,** director of recruiting and manning for the War Shipping Administration, announced.

Declaring our own problem is pretty imposing, he said:

"By the end of next year there will be delivered 2,000 new vessels, which with the present 1,200 ships will require a total of 90,000 new officers and men."

Louie Has a Birthday

Louis K. Siversen, president of the Columbia Machine Works, and one of the best known of the marine manufacturers on the Pacific Coast, was the recipient of messages of congratulations on his birthday on September 15.

Engaged in turning out defense work "Louie" had little time for natal observance as his San Francisco and Oakland shops have been humming full speed.

Leo Archer Back on Coast

Back to the Pacific Coast has come Leo E. Archer as manager of the Southern California offices with headquarters in Los Angeles of the Moore-McCormack Lines.

When Panama-Pacific Lines ceased operations on the Pacific Coast, Mr. Archer was slated for retirement. Then he joined the offices of Moore-McCormack as head of their passenger activities in New York.

He is widely known and popular on the West Coast.

"Herb" Thomas Retires

H. N. "Herb" Thomas for 30 years engaged in the transpacific and South Pacific passenger business has retired as passenger traffic manager of the Australian Service for the Matson Navigation Company.

His leave-taking from active duties followed right behind the recent retirement of **William H. Sellander** another veteran in point of service with the same company.

World travelers, sea captains, pursers, travel executives and shipping men throughout the world know Herb Thomas.

He was for years connected with the old Pacific Mail Steamship Company.

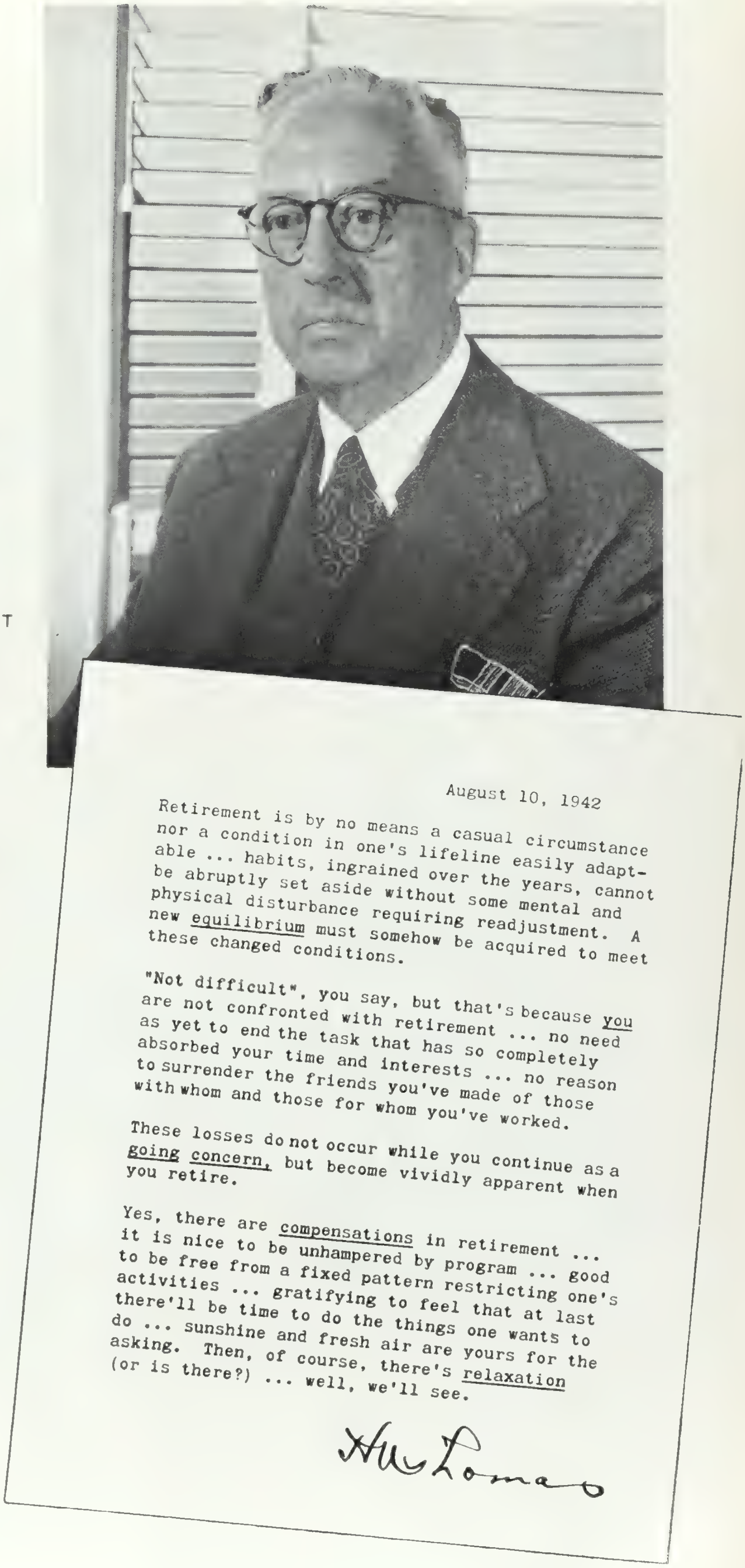
Dr. Grady Goes East For Conventions

Dr. Henry F. Grady, president of the American President Lines and chairman of the San Francisco Federal Reserve Bank, on October 6 went East by plane to attend the Conference of Federal Reserve Bank Chairmen at Washington, D. C., the National Foreign Trade Council Convention in Boston and the Sixteenth Annual Convention of the Propeller Club and American Merchant Marine Conference in New York.

Doctor Grady will deliver two principal addresses while he is in the East; the first, "Some Problems of Post-War Economic Reconstruction" at the Foreign Trade Convention in Boston on October 9, and "Air and Water Transportation in the Post-War Period" at the Propeller Club Convention at the Waldorf Astoria Hotel, October 16.

United Seamen's Service

Incorporation of the United Seamen's Service, as an organization devoted to the welfare of American and other United Nations merchant marine



"HERB" THOMAS and his RETIREMENT LETTER

August 10, 1942

Retirement is by no means a casual circumstance nor a condition in one's lifeline easily adaptable ... habits, ingrained over the years, cannot be abruptly set aside without some mental and physical disturbance requiring readjustment. A new equilibrium must somehow be acquired to meet these changed conditions.

"Not difficult", you say, but that's because you are not confronted with retirement ... no need as yet to end the task that has so completely absorbed your time and interests ... no reason to surrender the friends you've made of those with whom and those for whom you've worked.

These losses do not occur while you continue as a going concern, but become vividly apparent when you retire.

Yes, there are compensations in retirement ... it is nice to be unhampered by program ... good to be free from a fixed pattern restricting one's activities ... gratifying to feel that at last there'll be time to do the things one wants to do ... sunshine and fresh air are yours for the asking. Then, of course, there's relaxation (or is there?) ... well, we'll see.

HN Thomas

seamen and officers, and membership of its board of directors were announced August 31st by the War Shipping Administration.

The incorporators of USS are **Admiral Emory S. Land,** War Shipping Administrator; **Captain Edward Macauley,** Deputy Administrator of the War Shipping Administration; **Joseph Curran,** president of the National Maritime Union; **Harry Lundeberg,** president of the Seafarers' International Union; and **Basil Harris,** president of the United States Lines, New York.

This service, incorporated under the laws of New York, plans to maintain club houses and canteen facilities for seamen, and recreational, medical, educational, and various personal services for their benefit. Services which represent costs will be offered to seamen at nominal prices.

Admiral Land is Honorary Chairman of the board of directors, and **Henry J. Kaiser,** president of the Richmond Shipbuilding Corporation, is executive chairman. Others who have signified their acceptance as Trustees of the Board include the following:

Honorable **Schuyler Otis Bland** of Virginia, Chairman of the Merchant Marine and Fisheries Committee of the House of Representatives; **Joseph Davidson,** vice president of the American Emblem Company, Washington, D. C.; **Marshall E. Dimock,** Director of the Recruitment and Manning Organization, WSA; **Marshall Field, III,** Chicago; **Henry F. Grady,** President of the American President Lines, San Francisco; **Miss Gretchen Green,** The Whole World & Co., New York; **Farnham L. Griffith,** of McCutcheon, Olney, Mannon, Greene & Griffith, San Francisco; **Samuel J. Hogan,** president of the Marine Engineers' Beneficial Association, Washington, D. C.; **Mrs. Henry Howard,** president of the American Merchant Marine Library Association, New York.

A Progressive Rail-Sea-Air

The many Pacific Coast friends of **Lieut. Guy R. Shelton** will be glad to know that he is still traveling by plane and very happy over the responsibilities of "his assignment."

THIS SCENE is familiar to all navigators and symbolizes the brave silent men of the sea who are getting cargo to all parts of the world. This photo shows Captain Mely Gordenev and Chief Officer Robert Masters (second mate when pictured here but promoted shortly after) plotting the course of the Matson liner S. S. Maunalei.

Lieut. Shelton: was born in Virginia; educated in Washington, D. C.; served 14 years with the Southern Pacific R. R., much of the period in the office at San Francisco; served eight years as traffic representative of the Luckenbach S. S. Co. at San Francisco; and is a 32nd Degree Mason, a Shriner, and, when home, a resident of the Elks Club, San Francisco.

He graduated from the Fort Mason Officers' School and was commissioned 1st Lieut. U. S. Army in the Transportation Corps Services of Supply.

Lieut. Shelton's father and grandfather were officers in the U. S. Army in former years. He would appreciate hearing from his friends. His address is Lieut. Guy R. Shelton, 0-93939, Headquarters SOS - APO - 606, care Postmaster, Miami, Florida.

Transamerica Enterprising

On September 17, **Charles J. P. Hoehn,** of the Enterprise Engine & Foundry Company of San Francisco, announced that all the capital stock in his company had been acquired by Transamerica Corporation.

This concern manufactures diesel engines for marine and stationary use. The plant was established in 1886 and is now employing more than 1000 workers in war production orders.

Appointments

J. T. Vorhees, president of the Coen Company, announces the appointment of the E. L. Ryan Company, 122 Marine Avenue, Wilmington, to represent the Coen Company in the Wilmington and San Pedro areas.

The Coen Company was represented for many years by the L. E. Caverley Company of Wilmington, but a change became necessary when L. W. Rainey, manager of the company, was forced to retire from business because of ill health. We are sure Mr. Rainey's many friends on the waterfront will miss him.

K. H. Donavin, Pacific Coast manager of Moore-McCormack Lines, Inc. announced the appointment of **Kenneth C. Tripp** on October 1 as Western freight traffic manager.

195 Air Raids For Pearson

Captain A. W. Pearson, master of the steamer *Independence Hall,* is back in the United States after living through 195 air raids on the Russian port of Murmansk.

Assigned to carry out a mission to Russia by the Maritime Commission at the time, Captain Pearson traveled on a British vessel which was sunk. The American skipper was fished out of the sea by an escort vessel and landed at Murmansk right in the midst of the German aerial blitz.

LIEUT. GUY R. SHELTON

Shipping Men On Gripsholm

Heartfelt thanksgiving and gay reunion marked the return to their families of well-known West Coast steamship men, who were caught at various places in the Orient when attacked by Japan. They were among the exchanges between the two countries and the Americans came home to safe haven aboard the S. S. Gripsholm.

John N. Raymond, president of the American Trading & Shipping Company, was one of the first, returning after being away since October, 1941. He was in Hongkong when the British garrison fell. **F. F. Booth,** who was in the passenger offices of the American President Lines in Hongkong was another arrival. Others of APL from the Far East offices to reach San Francisco were **T. B. Wilson,** general agent; **W. F. Arndt,** freight agent; **H. M. Rowland,** freight department; **J. W. Clague,** passenger agent; **E. R. Hearther,** chief accountant; **Captain W. H. Thomas,** port captain, and **W. G. MacDonald** from Shanghai where he served as general passenger agent. **W. F. Sokall,** general agent in Genoa for A. P. L. has returned.

Southworth on Leave

Herb L. Southworth, chief engineer of George E. Swett & Company, engineers and contractors of San Francisco, has been given a leave of absence from his duties in order to go to sea again.

Herb has been snortin' around like an old fire horse for some months now, and will go out as the chief engineer of one of the Liberty ships.

Fred Esser, superintendent of construction, and **Jack Daws,** service engineer, will hold the fort unless "Uncle" puts the finger on them,—in that case the "gals" of the organization are equipped to shoulder a monkey wrench and give engineering service to the ships and shipyards. You just can't get that outfit down.

HERB L. SOUTHWORTH

New APL Vice President

Thomas E. Cuffe is being congratulated upon his election as vice president of the American President Lines in charge of Eastern U. S. A. territory. Announcement of his elevation was made by President Henry F. Grady on October 1.

Mr. Cuffe is a veteran in marine transportation. Returning from World War I, he finished his education at the University of California, and then joined the old Dollar Steamship Lines as a clerk in the Freight Department.

Advancing through the various departments of freight and freight traffic work, in 1932 he was named assistant to M. J. Buckley, freight traffic manager.

In 1938, when the Dollar Line was reorganized into the American President Lines, Tom was made assistant vice president and freight traffic manager.

THOMAS E. CUFFE

Shifts, Changes, Promotions

Franklin Howland, is now representative for the Lend-Lease agency in California with offices at 593 Market street, San Francisco. He was formerly with the shipping agency firm of Mattoon & Co.

George Baker, who was on the Pacific Mail Steamship Company's staff after the war in association with the late Daulton Mann, is now identified with the offices of the War Shipping Administration in San Francisco.

A. R. Lintner, Pacific Coast director of the War Shipping Administration, has completed the task of his personnel in Washington, Oregon, and California, by appointing the following:

William E. Brown, formerly general freight and passenger agent of the Alaska Steamship Company, has been appointed assistant director in charge of Northwest activities with Seattle headquarters.

E. A. Worley, one time with the Social Security organization in Washington, is Southern California assistant director with offices in Los Angeles.

William G. Tait, formerly secretary of the Pacific Westbound Conference of steamship lines in the Northwest, has been named to direct the cargo permit section with Seattle headquarters.

William T. Hayes, formerly chief surveyor for the Maritime Commission in Seattle, has been appointed district manager for the maintenance and repair division in the Pacific Northwest.

J. A. Kaufman has been placed in charge of the procurement and supplies division in the Pacific Northwest with headquarters in Seattle.

All WSA offices for the Northwest are located in the Dexter Horton Building, Seattle.

Sargis Promoted

Appointment of **S. G. Sargis** as assistant manager of industrial relations was announced recently by Columbia Steel Company, subsidiary of the United States Steel Corporation. Mr. Sargis, who replaces **C. T. Spivey,** recently transferred to the Company's

NED H. DEARBORN

Utah operations, was first employed by Columbia Steel Company as a draftsman in 1933 at its Ironton, Utah plant. In 1934, he entered the Coke Department and served as testing engineer, industrial engineer, and works industrial engineer until 1941, when he was transferred to the Company's Torrance, California plant as works industrial engineer. Shortly thereafter, he was promoted to supervisor of industrial relations.

Mr. Sargis is a native of Persia, educated in this country, served in the United States Army during the last war, and in 1925 graduated from the University of Wisconsin.

He will be succeeded at Torrance Plant by **J. H. Clark, Jr.,** assistant to the supervisor of industrial relations at Pittsburg Plant of Columbia Steel Company. Mr. Clark is a native of Cambridge, Massachusetts, and a graduate of Stanford University. He joined Columbia Steel Company as a junior industrial engineer, was promoted to assistant industrial engineer and joined the Industrial Relations Department as practice supervisor. In March of this year, he was promoted to the position of assistant to the supervisor of industrial relations.

Dearborn Safety Director

Ned H. Dearborn, of New York City, recently named executive vice president and managing director of the National Safety Council, was announced by Col. John Stilwell, president of the council, following a meeting of the executive committee.

He succeeds W. H. Cameron, who is retiring after almost 30 years as managing director of the council.

Since 1934, Mr. Dearborn has been dean of the Division of General Education of New York University, a post he now leaves.

Cargo Expert Retires

Harry Thompson was appointed manager of W. R. Grace & Co.'s Southern California offices, October 1, succeeding **Guy E. Buck,** who has retired. The announcement was made by **A. S. Rupley,** West Coast manager.

Thompson started as an office boy with the Grace interests more than a quarter of a century ago under **Edward T. Ford,** former vice president of W. R. Grace & Co., and now a member of the board of directors.

Guy Buck, now retiring, is one of the best-known freight men in the steamship business. He was one time with the Southern Pacific, then went to the Pacific Mail Steamship Company under the late **Daulton Mann.** In 1924, with the establishment of the Panama Mail Steamship Company, Buck was appointed freight manager. He served in this capacity until Grace Line took over active management.

He has been manager in Southern California during two different periods. His retirement is upon his physician's orders and he plans to make his home on his lemon ranch near Whittier.

Setzfand
An A. A. F. Captain

Charles M. Setzfand, United States Lines freight agent, has been commissioned a captain in the Army Air Force and left in September for Miami Beach for a six weeks' course at the Officers' Training School. On completion of the course he will be assigned to the Rome, N. Y., depot of the Air Service Command.

Mr. Setzfand is well known in traffic circles in the Metropolitan area and in New England, New Jersey and Pennsylvania. He joined the United States Lines organization in 1935 as freight agent of the Panama Pacific Line, an affiliated company, and was transferred to the United States Lines freight staff when all of the Panama Pacific Line ships were taken for war service.

Hunter Returns to General Steamship

A vacancy in the ranks of the San Francisco Bar Pilots exists with the resignation of Captain A. T. "Al" Hunter, who has returned to the executive staff of General Steamship Corporation as operating manager in the San Francisco headquarters.

News of Captain Hunter's decision came as a distinct surprise. He had been with General from 1920 to 1933 when he was named pilot. During this former service, however, Captain Hunter had shifted to New York to head the operations of the United States Lines under T. H. Rossbottom, handling such vessels as the Leviathan and George Washington.

Converts Home To Sailors' Haven

Harold G. Baxter, a Westinghouse engineer for 26 years, on September 18, began a six-month leave of absence to convert his Long Island residence into a sailors' convalescent home in memory of his son Donald, a Merchant Marine officer who lost his life two months ago when his ship was torpedoed and sunk in the Atlantic.

During the past 13 years, while Mr. Baxter has been employed at the East Pittsburgh Works of the Westinghouse Electric & Manufacturing Company, he and his wife have maintained homes at Wilkinsburg, Pa., and Baldwin, Long Island, N. Y. They already have notified the Seamen's Institute and the Union Jack Club in New York that their Long Island home "is open to sailors."

"Mrs. Baxter and I got the idea that Don would have wanted us to do something to make tired and wounded seamen comfortable. Our place has nine rooms, a library, and we'll enjoy entertaining officers and sailors."

Mr. Baxter worked in Westinghouse plants in Brooklyn, N. Y., and Newark, N. J., before coming to East Pittsburgh. He designs control equipment for electrical apparatus and has more than 30 patents to his credit.

Born in England 58 years ago, he studied electrical engineering at Ratcliffe College and Manchester School of Technology in that country. He came to the United States in 1913.

Necrology

Sales Engineer Passes

Edward H. Thomas, manager of New York office of Farrel-Birmingham Company of Ansonia, Connecticut, and Buffalo, New York, died at the Presbyterian Hospital in Pittsburgh on Sunday, September 13, following a heart attack on the preceding Tuesday.

Mr. Thomas was born in New York City on July 1, 1886. He received his early education in the public schools of East Orange, N. Jersey, and graduated from Stevens Institute of Technology with a degree of Mechanical Engineer.

After graduation, he became engaged in the design, erection and operation of sugar factories in Puerto Rico, Cuba, Santa Domingo, Louisiana, and the Philippine Islands. In March, 1926, he became affiliated with Farrel-Birmingham Company as sales engineer and manager of the company's New York office.

During World War I, he served in the Ordnance Department supervising the manufacture of TNT. In the years of the country's maritime expansion preceding and during the present World War, he was active in the sale and installation of gear drives in many types of commercial and Maritime Commission ships.

Of a genial and helpful disposition, he was highly esteemed for his personal qualities as well as for his professional ability.

Famous Port Engineer

Gustave B. Hegardt, 83, retired chief engineer and manager of the Port of Oakland and one of the West's most outstanding port engineers, died recently in Oakland after a week's illness.

Mr. Hegardt was born in Sweden and came to the United States when a boy. He studied at various technical and engineering schools, and for a time was with the U. S. Army Corps of Engineers.

He was in charge of construction of locks and dams in the Illinois River, the Cascade Locks in Oregon, and supervised construction of the jetties at the entrance to the Columbia River.

He developed the modern Port of Portland and was its manager and chief engineer for many years.

In 1925 Mr. Hegardt was one of a three-man board which surveyed the possibilities of establishing harbor facilities in Oakland, and after the survey was completed, was selected as chief engineer and port manager to carry out the program. He retired in 1932, climaxing almost half a century of outstanding engineering, and seven years in Oakland public service.

Surviving are his widow, Mrs. Mary Norbert Hegardt, who lives at 824 York street, Oakland; two daughters, Mary and Nellie, of Oakland, and one son, James Hegardt, of Portland, Ore.

Noted Industrialist

Francis J. Arend, founder and president of the De Laval Steam Turbine Company, died August 24, 1942, at the Fitkin Memorial Hospital, Neptune, N. J. He was also president of the De Laval Separator Co., which has grown from a very small beginning to a nation-wide organization during his association with it.

Mr. Arend was a director of the Marine Midland Trust Company of New York, the Allenhurst (N. J.) Bank & Trust Company, the Arex Indemnity Company of New York, and the Fitkin Memorial Hospital.

Mr. Arend was a man of exceptional ability and all who came in contact with him were impressed by his farseeing wisdom, able judgment and executive ability.

Veteran Passes

Harry Hatch, veteran of marine and air transportation, died suddenly August 29, in his home in Los Angeles. He was 53 years of age.

At the time of his passing Mr. Hatch was Pacific Coast agent and foreign manager for T. W. A. He had been in air transportation since October 1936. However, he is best known for his long association with the Pacific Steamship Company and the American President Lines.

EDWARD H. THOMAS

A native of Teeniel, Ga., Hatch served in World War I, as a lieutenant in the Quartermaster Corps.

Lumber Shipper Services

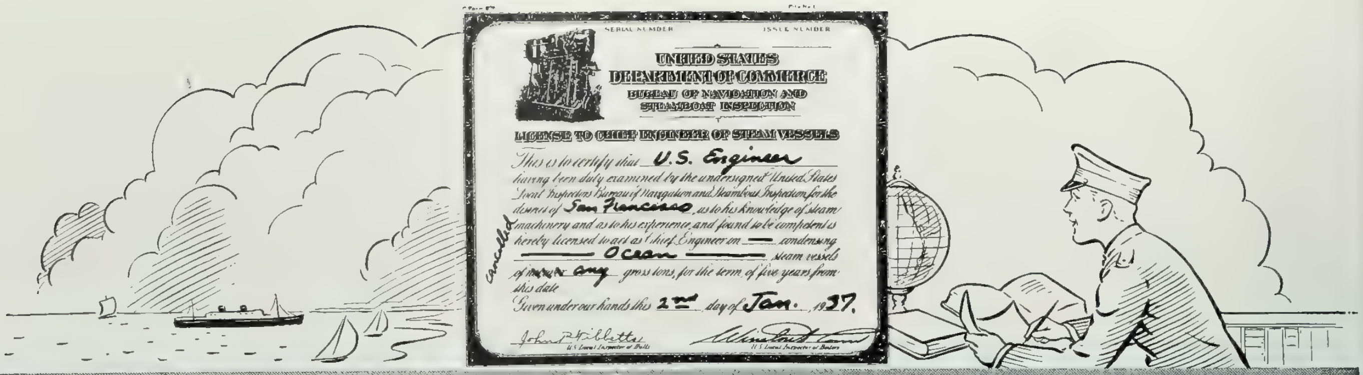
Funeral services were held on September 3, in Oakland, for **Captain O. Anderson,** 82 years of age, whose sea career was indelibly linked with the development of the Pacific Coast lumber-carrying trade. For years Captain Anderson was on the bridge of sturdy steam schooners that sailed the coast.

Manufacturer Dies

Alfred E. Seelig, president and general manager of the L. J. Wing Mfg. Co., New York City, manufacturers of unit heaters, turbines, blowers and ventilating equipment, died September 13, 1942, after a long illness at the age of 54. Mr. Seelig had been associated with the L. J. Wing Mfg. Co. for 26 years and was responsible for much of the development work on the turbine and blower division of the company. He was a member of the Society of Heating and Ventilating Engineers.

Secretary Passes

J. R. West, aged 60, secretary of the Northwest Marine Terminal Association, chairman of the Joint Coordinating Committee of the California Association of Port Authorities, and District Safety Engineer of the Accident Prevention Bureau of the Waterfront Employers, died recently in Portland, Ore.



SERIAL NUMBER
ISSUE NUMBER

UNITED STATES
DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION AND
STEAMBOAT INSPECTION

LICENSE TO CHIEF ENGINEER OF STEAM VESSELS

This is to certify that U.S. Engineer having been duly examined by the undersigned United States Local Inspectors Bureau of Navigation and Steamboat Inspection for the district of San Francisco, as to his knowledge of steam machinery and as to his experience, and found to be competent is hereby licensed to act as Chief Engineer on — condensing — Ocean — steam vessels of any gross tons, for the term of five years from this date

Given under our hands this 2nd day of Jan., 1937.

Cancelled

John P. Willette
U.S. Local Inspector of Hulls

U.S. Local Inspector of Boilers

Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

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QUESTIONS FROM THE SHIPS

QUESTION

Please discuss the care and maintenance of the electrical insulation and coils of the motors and generators on board ship.

W. G. K., New York.

ANSWER

The general assumption among operating engineers is that the life of electrical machines is limited by the life of the insulation on the coils. This seems to be a pretty good conclusion, subject, of course, to the general statement that coils can be removed and reinsulated or replaced to add new life to the machine. Properly cared for, insulation should last 15 to 20 years.

Too much care, by way of cleaning and brushing of dirt from coils, can go so far as to wear and damage the insulation. A case is on record where large high-voltage coils were washed and cleaned at the end of each trip, and failure occurred in a matter of a very few years.

The insulation on the propulsion motor and generator stators is many layers of varnished cambric tape finally treated with many dippings and bakings of high-grade electrical varnish. When new, the exterior surface has a glossy black appearance, and is slightly plastic—only, however, to the extent of taking the dent from the fingernail, quite hard but not brittle. The varnish softens slightly when hot from loading. The thickness of the insulation on high-voltage coils aboard ship may vary from one-eighth to three-eighths inch.

Aside from mechanical injury to the insulation, there are only two factors which injure it — temperature and moisture. These two factors are possible respectively at load and standing idle, so that care must be used to control conditions at all times.

The varnishes and cambrics used are subject to carbonization or even combustion at elevated temperatures. The capacity of electrical machines within limits may be increased by the simple procedure of allowing them to operate at higher temperatures. Thus the safe, long-life operating temperature of insulation determines to an extent the size and capacity of machines.

Much work and experience has gone into the final standard figure of 105° C. (221° F.) as the limiting temperature at which insulation, principally hydrocarbon in nature, may operate for a reasonable life. This standard is given importance through approval by the American Institute of Electrical Engineers.

Insulation held at 105° C. continuously for 10 years becomes brittle, absorbs moisture rapidly, and must be replaced. If the insulation is held at this temperature for 12 hours each day and allowed to cool off for 12 hours, it will retain its usefulness for 20 years or more.

Machines are usually designed so that no part of the insulation will exceed 105° C. at normal load. The insulation tape on the coil at the center of the slot is the hottest spot. To provide margin, it is recommended that coils and the laminated iron members containing coils be kept at less than 90° C. (194° F.) at all times.

Normal temperature and use ages insulation. It dries out, and motion or vibration may open cracks after several years.

The design of the machine, including the air movement, air ducts, areas, heat dissipation, and so on, is based on the coils' being fairly clean, free from a bed or pack of dust, the ducts being open for normal air flow. Normal usage, in an engine room, with moisture and oil vapors present, causes dust and dirt to impact on the coils and in the ducts. This acts as a blanket and causes the coil and insulation temperature to go up. It may raise the temperature above a safe value; it surely shortens the life, as lower temperature means longer life.

The modern high-speed turbine generator has its own self-contained cooling air, which, picking up heat from coils, drops it again in air-to-water heat exchanger and returns to the generator. The air is therefore clean and free from dust. Coils in this generator will remain bright and glossy for years, and no maintenance is needed, although megger reading should be recorded.

The main motor coils are cooled by air drawn from the engine room and exhausted overboard by blowers.

High-velocity air has a tendency to deposit its dust and vapors on any surface presented to it as an obstruction. Blowing over coils, it builds up characteristic ridges of dirt on areas in the air stream, while areas shielded from direct impact of air do not collect so much dirt. The blades of fans and blowers after long use show this peculiar demarcation.

The frequency and manner of cleaning the coils and air ducts requires a great deal of good judgment.

Cleaning should be limited as much as possible to blowing with clean, dry air at not too high a pressure—30 to 50 lbs. This will not remove the caked dirt, which can be gently pushed loose with soft wood or fiber tools, then blown out. Where the caking is due to much oil in the engine room, the dirt can be loosened by washing with carbon tetrachloride.

The solvent may be sprayed on, and after allowing it to soak and loosen the dirt it may be pushed and poked off, or brushed off with a soft hairbrush. Care must be used to ventilate when using any solvent, as the vapors may be so dense as to render the space unhealthy for the workers. Do not use stiff-bristled or wire brushes, as the surface of the varnish will be eroded. In applying any tools on the insulation and in the ducts, great care must be used. A slip of the tool will mar the insulation and start a process of gradual failure.

Ordinary wipers, especially those employed from ashore, should not be entrusted with cleaning insulation unless they are especially trained for it.

After washing and blowing out, time must be allowed for thorough drying while ventilating. When dry, the coils should be given a good brushing or several spray applications of a good air-dry electrical varnish. Bright, glossy surfaces do not collect dirt as rapidly as rough, dull surfaces do.

"The Chief" feels that entirely too much has been made of the business of cleaning coils on electric machines in the marine field. Shore plants run for years in engine rooms much dustier than aboard ship, with no thought of cleaning until they note the temperature 10 degrees or so higher than usual. Then they may schedule a cleaning operation sometime in the future when the mechanical end of the plant needs a shut-down.

It is doubtful whether any shore plant machines of sizes and voltages as used aboard ship have been cleaned as often as once a year throughout their life.

"The Chief" feels that a scheduled coil cleaning to correspond with the drydocking of the ship should suffice. The process may then remove more dirt than if cleaned weekly or even monthly, but it is better to avoid all possibility and risk of eroding or injuring the insulation surface.

Moisture and the megger readings change together; one goes up, the other down.

Moisture is absorbed when a machine is shut down, particularly when shut down long enough to cool the atmospheric temperature on a humid or foggy day.

The megger is an excellent instrument to give some indication of the condition of the insulation as regards moisture content, particularly moisture on leakage surfaces. At the machine terminals and switchboard, the insulated conductor terminates in a lug which may not be taped over. From the point where insulation and bare copper meet, to the nearest ground, probably the cable armor, is a surface of insulation along which leakage can occur if it is moist. The megger measures this as well as the much less probable leakage directly through the insulation. If the megger reads low, always suspect moisture and terminal leakage first.

If the insulation is old, dry and brittle, moisture will be absorbed and leakage will take place directly through it.

The megger applies about 600 volts dc to the insulation and measures the very small current that flows under this voltage, but indicates directly in ohms by internally solving the equation: $\text{ohms} = \dfrac{\text{volts}}{\text{amperes}}$

The indication usually is in millions of ohms, one million ohms being one meg-ohm, hence the name megger.

The safe value in megohms to be guided by is in dispute by authorities. This is because the resistance does not tell the whole story of the insulation. Many failures have occurred on insulation, reading very high on the megger just before the failure. There is no direct or absolute relation between megohms of the insulation and its condition. It is about like putting 60 lbs. water pressure on a 400-lb. boiler, carefully measuring the leakage, and if leakage is low enough, declaring the boiler safe.

The American Institute of Electrical Engineers have for many years standardized the relationship that safe megger reading in megohms is

$$\text{megohms} = \frac{\text{volts, rated}}{\dfrac{\text{kva}}{100} + 1000}$$

For a 5000-kva, 2300-volt machine, this figures 2.2 megohms.

A large electrical manufacturer has accepted for his own use the formula for a cold machine:

$$\text{megohms} = \frac{3 \times \text{rated volts}}{\text{kva}}$$

For the above machine, this figures 1.38 megohms.

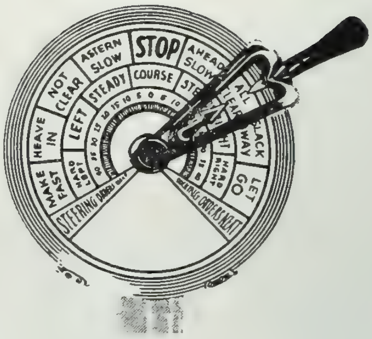
It is to be noted that the larger the machine is the lower the safe megohm value.

"The Chief" believes that for marine machines with voltage in the order of 2300 volts the megger will normally read 50 or 100 megohms; that any reading less than 1½ megohms should be followed by special attention to insulation, such as watching carefully for a trip, checking again with the megger immediately after shut-down and while still hot, and perhaps doing this several times, keeping a record and watching the trend. If the low reading is due to moisture, it will be lower hot, higher cool, as heat steams the moisture into the insulation. Running at normal load is an excellent method to dry out a machine.

This subject is worthy of considerably more discussion, which will be gladly offered by "The Chief" if further questions come in.

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A Department for Deck Officers

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

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OCEAN WAVES

QUESTION

What is the cause of waves on the ocean?

ANSWER

Waves arise from causes such as:

1. Wind over the ocean.
2. The tide-producing forces of the sun and the moon.
3. The activity of submarine volcanoes and earthquakes.

Each of these causes produces a different type of wave.

the most common type of ocean wave is caused by the wind. The wind does not blow at a constant velocity but is always in irregular gusts; these gusts subject the ocean surface to irregular and unequal pressures, which deform it from a level surface to one of *troughs* and *crests*.

QUESTION

Does the area of the body of water have any relation to the size of the waves?

ANSWER

The size of the waves depends upon the strength of the wind, its duration, and the extent of the open water over which it blows.

Lengths of waves are increased when the length of the *fetch*, or length of the body of water to windward, is increased. The wave-raising power of the wind is always greater when acting upon water already in waves than upon relatively smooth water.

QUESTION

How is the size and velocity of a wave determined?

ANSWER

The length of a wave is the hozizontal distance from trough to trough, or from crest to crest.

The height of a wave is the vertical distance measured from the bottom of the trough to the top of the crest. The period of a wave is the time interval in seconds between the passage of two successive crests past a fixed point.

The velocity of a wave is the rate at which its crest moves forward, or the velocity equals the length divided by the period.

An approximate method of determining the velocity of a wave is to multiply the period in seconds by three, the product will be nearly the velocity of the wave in knots.

QUESTION

How does the size of waves vary in the different oceans of the world?

ANSWER

The longest wave recorded is one of 2600 feet in length with a period of 23 seconds.

The longest waves ever encountered in the South Pacific ocean were of lengths varying from 600 to 1000 feet with periods of from 11 to 14 seconds.

In the Atlantic ocean, waves are usually from 150 to 300 feet in length with periods of about 6 or 8 seconds. However, waves up to 500 or 600 feet in length are sometimes encountered in the Atlantic.

QUESTION

How does a wave travel over the surface of the ocean?

ANSWER

In all types of waves, the wave form moves away over the surface of the water, while the individual water particles move only a comparatively short distance. In typical waves in deep water, each water particle moves through a circular orbit; the particle moves forward on the crest of the wave, down on the back, backwards in the trough and upwards on the wave front.

QUESTION

To what depth below the surface of the water does the wave action extend?

ANSWER

In deep water, the theoretical form of waves are profiles of curves which would be described by points within a circle which is rolling along the underside of a straight line. For instance, if the sea is disturbed by waves having a height of 20 feet and a length of 400 feet, the water particles at the surface move in circles having a diameter of 20 feet. The disturbance set up by the wave motion extends for some distance below the surface, but the size of the orbits through which the water particles move, decreases rapidly with increase in depth. At a depth equal to one wave length, the water at that point may be considered to be undisturbed, and the motion associated with the largest ocean waves is inappreciable at even modest depths.

QUESTION

How are breakers formed along a coast line?

ANSWER

An individual breaking wave is called a *breaker*. Waves from deep water are modified as they get into shallow or shoal water. When the depth is reduced to one-half the wave length, the orbit of the water particles commence to become flat. The period of the wave is unchanged, but the length and the speed are increased. Consequently, the wave becomes higher and shorter; the crest arches forward, and, finding itself unsupported by sufficient water on the front, dashes downward with a roar producing a wave broken into surf.

QUESTION

What is a ground swell and how is it formed?

ANSWER

When waves arise in the sea, they are propagated very many miles from the place from which they originate. As the waves move beyond the windswept region, they become gradually lessened in height and give rise to the gentle indulation known as the *swell* or *ground swell*. The term *swell* is also used to denote the gradual dying down of waves that the wind in the immediate vicinity had previously set up.

Along open coasts, this swell frequently assumes very considerable importance in connection with shipping, sometimes isolating ports as a result of swells caused by storms a thousand miles or more at sea.

QUESTION

What type of wave is produced as the result of a submarine earthquake?

ANSWER

A submarine earthquake may produce several types of waves. First, the short and quick oscillations which travel to the surface with the velocity of sound through water. This will cause any overlying vessel to feel a sharp and violent shock like a ship striking a reef. Such shocks may be severe enough to lift a vessel out of the water. Other types of waves are produced by the dislocation of the sea bottom. The uplifted portion of the sea bottom raises a mound of water above the normal surface of the sea, the settling back of this water generates a great wave which will traverse the ocean with high velocity. Sometimes several such waves are produced.

A submarine volcanic explosion will produce a sharp and powerful shock similar to the earthquake effect. Small jets of water may be shot into the air, to be followed by upswelling of the ocean surface, and finally the whole mass of upraised water may be hurled into the air by the escaping gases. The back falling mass of water will produce waves. It is noticeable that on the open sea the height of earthquake and submarine explosion waves quickly diminish, and, since the lengths are very great, they become so low and flat as to be unnoticed by vessels. However, when they enter shallow water, they act like other waves, the height increasing until the wave form breaks to produce a gigantic surf. The velocity of these waves is sometimes very great and the height of the wave when reaching the coast may be as much as fifty feet.

In 1868, an earthquake on the coast of Peru resulted in high waves, one of which submerged the mainland 55 feet above high water mark. A United States vessel was carried a quarter of a mile inland at Arica, where it remained until another great wave, caused by the Iquique earthquake of 1877, carried the vessel still further inland. This last wave was reported to have a height of about 80 feet.

QUESTION

What is an iceberg and how is it formed?

ANSWER

In the first place, ice is composed of crystals formed in freezing water when being converted from a liquid to a solid state. It is also formed from snow which has been subjected to such a pressure that all the air has been expelled from the particles of snow.

An iceberg has its origin in a glacier, which is a slow moving river of ice formed on the slopes of lofty mountains from snow compacted into ice by pressure. The glaciers of the polar regions are pressed down the valleys towards the ocean by the accumulative pressure of the frozen snow in the rear. After reaching the coast, the front part of the glacier is pushed forward and protrudes to seaward until it is water borne. The effect of the unequal strain caused by its own weight, and also by the action of the sea, causes a portion of the glacier to break off and float away as an iceberg; this is known as the "calving" of an iceberg.

Ice possesses a peculiar quality known as "regelation." This is the property possessed by lumps of ice to separate from each other when subjected to pressure, and to freeze together again when the pressure is removed.

QUESTION

What are different names given to forms and bodies of floating ice?

ANSWER

1. *An ice barrier* is an ice cliff extending from and attached to the face of a precipitous shore.
2. *A growler* is a small iceberg trapped in a field of ice.
3. *Hummocky ice* is formed by the pressure of the wind causing the pieces of ice in a flow to ride over each other and pile up into hummocks.
4. *A floeberg* is a thick piece of salt water ice, presenting the appearance of a small iceberg.
5. *Pack ice* is formed of broken up and separated pieces of ice which have closed together again. It is intersected by lanes of water which open and close thus forming more or less navigable or unnavigable channels.
6. *Sludge ice* is composed of small pieces of ice through which a ship can easily force her way.
7. *Slob ice* is the first ice to be formed, it sometimes piles up under

(Page 108, please)

Indestructible
ALWAYS-LEGIBLE LABEL PLATES

THE ENTRANCE to every enclosed space, the handle to every valve, all the cases enclosing instruments, each piece of machinery, every electrical fitting, and many other items on every ship must be labeled. The character and the legend on each of these labels are, in a large number of cases, a matter of specification, and, in a large number of cases, a matter of marine laws and regulations.

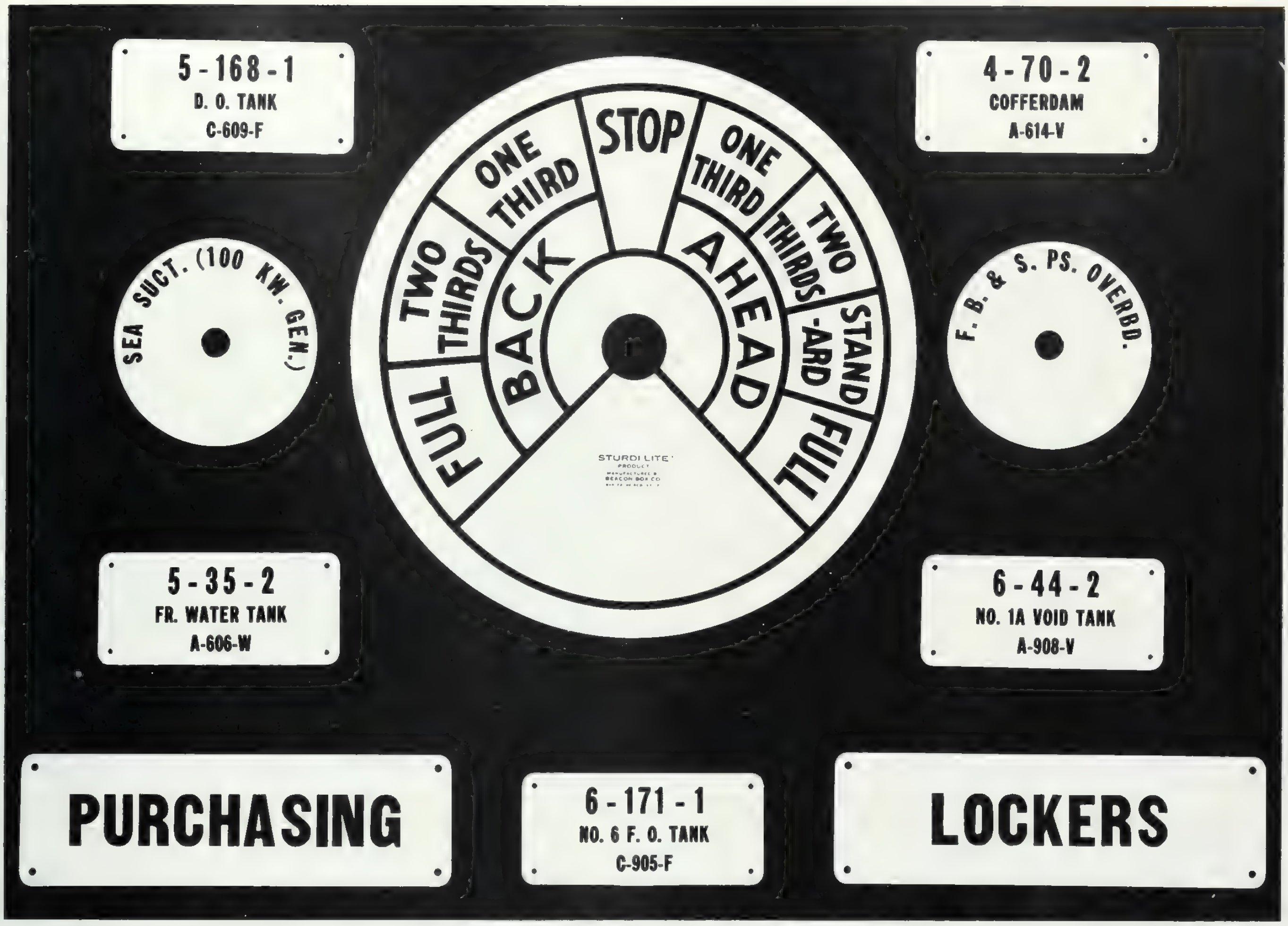
CLIFFORD D. GOOD of Beacon Box Company putting a "Sturdi-Lite" label through the hammer test.

For many years on American merchant and naval vessels, standard practice has specified brass for these label plates. Brass is now a strategic war metal, and in recent months a directive has gone out from the War Production Board to all shipyards ordering the greatest possible elimination of brass in ship and marine machinery construction. Any metallic substitute for brass, such as copper or aluminum, is equally or more strategic.

The Beacon Box Company of San Francisco visualized this problem and began to experiment with non-metallic substitutes for brass in marine labels. This firm had been manufacturing boxes from cellulose acetate sheeting and were thoroughly familiar with the manufacturing possibilities in that type of plastic.

They proposed to the U. S. Naval authorities at Mare Island Navy Yard that plastic sheeting be used as a label and name-plate material, which in comparison with brass would be: lighter in weight; about the same cost; and more legible.

The Navy welcomed this suggestion but set up some very drastic specifications that must be met. Working together with Mare Island and using the laboratories at Mare Island Navy Yard for testing, the company experts have developed a most remarkable name or label plate that seems destined to replace metal for these purposes.



EXAMPLES OF "STURDI-LITE" LABELS.

These plates are now in production at the shops of the Beacon Box Company, San Francisco, and are sold under the trade name "Sturdi-Lite."

The "Sturdi-Lite" plates consist wholly of plastic with no paper or foreign substance used in their manufacture, and the legend may be of any color or a combination of colors desired. The legend is inserted in the center of the lamination and then processed by their method of lamination so that the plate is amply protected. It may be of any thickness required, and may likewise be furnished in any shape.

Much of the experimental work was devoted to the problem of producing a substance that could be used for the legend that would meet the requirements and would stand up under the welding process and give a permanent, sharply-defined impression.

"Sturdi-Lite" plates as now manufactured can be beaten with hammers, or scratched with chisels, to an extent that would completely ruin a brass plate, and show no material diminution of legibility or loss of shape.

If one of the plates is held in a flame for some time, it will catch fire and burn slowly but it will soon extinguish itself by action of the material, and, while burning, is listed as slow burning. The plates have been approved by the Navy for their heat and burning test. This material will stand continued exposure up to 150° F.

The plates are pliable and flexible enough to fit any rounded or angular surface, and they never break or shatter when struck by tools or falling objects. Although many plates have been tested to the limit in efforts to prove that they will split apart or that the legend can be made unreadable, not one case of delamination or obliteration has yet occurred.

The material used in manufacturing "Sturdi-Lite" is not adversely affected by salt water, salt atmosphere, oil, or by any shipboard condition. Supply of this material is practically unlimited and orders for these plates can be filled promptly.

The Beacon Box Company will be very glad to confer with shipowners and shipbuilders on name plate, label plate, and damage control plate problems, or on any problems involved in the use of plastics aboard ship.

There are many applications of glass aboard ship wherein plastic plates or sheets may be substituted to advantage, especially in war times. The glass dials on engine room telegraphs are very apt to be shattered by the concussion from gun fire. This same cause may take out the glass covers on instruments. In any application of this type, these plastic sheet-welded plates are ideal.

"Sturdi-Lite" plates have had many applications on ships under repair or construction with the approval of the U. S. Navy, and the U. S. Maritime Commission.

CARRIER
Aids
PACIFIC COAST SHIPBUILDING

JOHN F. KOOISTRA

CARRIER CORPORATION Marine Division is currently supplying great quantities of complete refrigerating plants to the new ships building for the U. S. Navy and for the U. S. Maritime Commission. In fact, the efforts of this corporation, to cooperate with the Commission and with the Navy, both in expansion of plant to meet demand and in engineering service to shipbuilders and operators, has brought praise and awards of an "E" Pennant.

GEORGE E. SWETT

Carrier Marine Division policy has always maintained a high standard of representation at all principal ports. The San Francisco office, headquarters for the Pacific Coast, is in charge of John F. Kooistra, who has had 12 years' experience with Carrier covering various phases of refrigeration. Mr. Kooistra has been five years on the Pacific Coast. On January 1 he was directed to assume full charge of the Marine Division on the Pacific Coast, and the San Francisco office was made a branch of the New York headquarters of the Marine Division of the Carrier corporation.

George E. Swett & Co. Engineers of San Francisco, who for many years have distributed and serviced Carrier Marine Division installations in Central California, will continue to give Carrier marine refrigeration products the same high-class sales efforts and engineering service that has characterized their representation of this firm for the past years.

In Southern California, Carrier marine refrigeration sales and service is now vested in Ralph E. Manns Co. of Wilmington. Mr. Manns is a very capable refrigeration engineer of much marine experience, who will be of great help to Southern California shipbuilders in solving their refrigeration machinery installation problems.

For the Columbia River section, Carrier is represented by the Western Engineering Company of Portland. Mark Postlewaite, who handles refrigeration problems for this firm, is one of the most experienced refrigeration engineers on the Pacific Coast. His wise counsel and practical suggestions have solved many technical problems for ship operators of the Northwest.

The long cooperation of Carrier Marine Division with the U. S. Navy and with the U. S. Maritime Commission, combined with the present close tie-in between the San Francisco branch and the New York headquarters, enables Pacific Coast representatives of Carrier to keep their clients the shipbuilders supplied with refrigeration plants in correct sequence for the shipbuilding schedules and thus helps in the remarkable ship production records being made in many Pacific Coast shipyards.

THE NEW GOLDEN ROD *Electrode Holder*

Carl L. Wood, master electrician of the Permanente Metals Corporation, Richmond Shipyard Number Two, has singularly contributed to the war effort. Recently, he perfected and applied for patents on a new electrode holder, which is being marketed by the Golden Rod Equipment Company of San Francisco, and is being used extensively in Bay shipyards and plants.

Very rugged and quite simple, the electrode holder has only eight parts, which are:

(1) The handle: made of very hard fiber, properly grooved so that it will not slip in the welder's hand.

(2) The main body: the rear end which holds the welding cable and the front end presses against the electrode and holds it firmly and rigidly in the tip.

(3) The fully insulated tip: a recently perfected plastic, made to withstand heavy impact and high welding heat, formed around a core of steel. One end of this tip is threaded and screws onto the tongue that holds the electrode in place. As shown in the illustration, the other end of the tip has a hole in it, which will take up to one-quarter-inch electrodes, which are held in place and positive contact by screwing the tip against the tongue.

(4) Retainer screws; male and female, which hold the handle securely in place around the main body.

(5) Insulated fiber: encasing the retainer screw.

(6) Terminal: which anchors the welding cable in the main body.

(7) and (8) Terminal retainer screws: there are *two* in order to give a maximum contact and to firmly secure the cable in place.

The new Golden Rod electrode holder has a number of points that make it superior in durability and performance. First and foremost, it is fully insulated, affording excellent protection to the welder, as there are no exposed metal parts to cause shorts or flashes. Unlike most "stingers," it is not necessary to return the holder to the repair shop when the tip does finally burn out. It is only necessary to unscrew the used tip and replace it with a new one right on the job. From experience in various shipyards and plants, it is safe to say that the holder itself will outlast several tips, and the same experience has shown that many of these tips are still in constant operation after six weeks' use.

With a partially insulated holder, the welder must be quite careful where he lays it down, but the Golden Rod may be laid, suspended, or dropped anywhere on the grounded surface without shorting or flare-backs.

Another good feature is the lack of handles or gadgets to snag when the Golden Rod holder is dragged by the cable. It is not necessary to disconnect any part of the holder when drawing it through small openings. This is the answer in welding inside of pipe and in tight corners. In welding overhead, welding rod is inserted in the tip and bent to any angle desired without danger of cracking flux at the bend.

Streamlined and quite light, the holder is always in perfect balance, and due to its positive contacts, remains quite cool under the most trying conditions of building ships in record time. In the hands of experienced and inexperienced welders, the Golden Rod Holder, with its simplicity and added protection from accidents on the job, is proving one of the most useful of the many new tools developed under the driving force of the Henry J. Kaiser organizations.

Alfite Carbon Dioxide Engine

The Alfite carbon dioxide engine is the only 100 lb. engine approved by Underwriters' and Associated Factory Mutual Laboratories for use on both electrical and oil fires.

It is also equipped with an Anti-Statik horn to protect the operator from static charge. It is designed for perfect balance at wheeling height, has a third swivel wheel for easy maneuvering, and a retaining latch which releases horn instantly, yet holds it firmly in place when not in use.

It is recommended for fires in flammable liquids, alcohol storage, electrical machinery, and for other class "B" and "C" fires. It smothers fire instantly with carbon dioxide gas which expands upon discharge to 450 times its stored volume. It is non-corrosive, non-poisonous, odorless.

Alfite carbon dioxide engines are manufactured by American-LaFrance-Foamite Corporation.

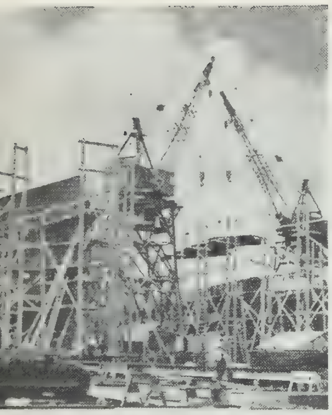
Hall-Scott Earns Army-Navy "E"

Veteran of two world cataclysms, the Hall-Scott engine has worn its service stripes quietly and well since it was early called back into service at the outbreak of the present war, long before the United States became involved in the world-wide struggle. Now, for its service to the United Nations, it has just received the Army and Navy award from Secretary of the Navy Knox.

Created during World War I, at the request of the U. S. Government which called for an engine of great stamina and endurance, Hall-Scott engines have in peace-time furnished power for some of our finest yachts, as well as for Coast Guard and other rescue craft.

The Hall-Scott Defender was especially designed for the U. S. Navy; while the Invader furnishes power for torpedo patrol boats, sub-chasers, aircraft rescue boats, picket and patrol boats, and the smaller craft that are playing so valiant a role in the present great struggle. They give the speed and striking power necessary for the attack—as in the Commando raids—and offer protection in the convoy.

(More Keep Posted on page 124)



On the Ways -
SHIPS IN THE MAKING

Two-A-Day Stride For American Shipyards in August

American shipyards continued to turn out completed merchant ships at a rate better than two a day during the month of August, the Maritime Commission announced.

A total of 68 new cargo carriers and large tankers were put into service and represent 753,600 deadweight tons.

Included in the total were 57 Liberty ships, four large tankers, three C-2 vessels of the Commission's standard design, two cargo ships for the British, one large combination passenger-cargo ship and one large Great Lakes ore carrier.

West Coast yards regained the honor of being the most productive by delivering 31 ships. Atlantic Coast yards, which led the nation the previous month, had 24, and Gulf Coast yards turned out 12 ships. California Shipbuilding Corporation, Wilmington, California, delivering 11 ships, was the largest single producer for the month and completed its original contracts for 55 Liberty ships almost seven months ahead of schedule. It is now engaged on another contract for 109 ships.

The month also witnessed another substantial reduction in the building time of Liberty ships. The average time for the August deliveries by all shipyards constructing this type of ship was 83.3 days from keel laying to delivery. This is the lowest mark yet attained and is an improvement over the July average of 108.4 days. Ever since January, when the average time for Liberty ships completed in that month was 241.3 days, shipbuilders have so speeded up their construction methods that they have now reduced the average time by almost two-thirds.

Oregon Shipbuilding Corporation, which holds the record for speedy ship construction, delivered 9 vessels in August with an average of 50.2 days per ship from keel laying to delivery; California Shipbuilding Corporation averaged 61.3 days for its 11 ships; and Bethlehem - Fairfield Shipyard, Inc. averaged 61.7 for its 9 ships.

August Delivery Records

SHIPYARD	NO.	TYPE OF SHIP
Alabama Dry Dock & Shipbuilding Co., Mobile, Ala.	3	Liberty
Bethlehem-Fairfield Shipyard,. Inc., Baltimore, Md.	9	Liberty
Bethlehem-Sparrows Point Shipyard, Inc., Baltimore, Md.	1 1	Passenger-Cargo Tanker
California Shipbuilding Corporation, Wilmington, Calif.	11	Liberty
Delta Shipbuilding Company, Inc., New Orleans, La.	3	Liberty
Federal Shipbuilding & Dry Dock Co., Kearny, N. J.	1	C-2
Great Lakes Engineering Works, River Rouge, Mich.	1	Ore Carrier
Gulf Shipbuilding Corporation, Mobile, Ala.	1	C-2
Houston Shipbuilding Corporation, Houston, Texas	5	Liberty
Kaiser Company, Inc., Vancouver, Wash.	1	Liberty
North Carolina Shipbuilding Company, Wilmington, N. C.	4	Liberty
Oregon Shipbuilding Corporation, Portland, Ore.	9	Liberty
Permanente Metals Corporation (Richmond Yard No. 1) Richmond, Calif.	2	Liberty
Permanente Metals Corporation (Richmond Yard No. 2) Richmond, Calif.	8	Liberty
South Portland Shipbuilding Corporation, So. Portland, Me.	2	Liberty
Sun Shipbuilding and Dry Dock Company, Chester, Pa.	1 3	C-2 Tankers
Todd-Bath Iron Shipbuilding Corporation, So. Portland, Me.	2	British
Total	68	

THREE SHIPS A DAY REACHED IN SEPTEMBER

Marking the most outstanding ship production record ever achieved in world history, Rear Admiral Howard L. Vickery, Vice Chairman, United States Maritime Commission and Deputy Administrator for the War Shipping Administration, on October 1st announced that American shipyards had reached their promised goal of three ships a day by delivering into service 93 new cargo vessels of all types, with a dead-weight tonnage of 1,009,800 during the month of September.

The record-breaking construction for this single month closely approaches the production for the entire twelve months of 1941. Thus far, during 1942, American shipyards have produced 460 vessels totaling 5,101,956 tons deadweight.

Of the 93 vessels, totaling 1,009,800 tons deadweight, delivered during September, 67 were Liberty ships, 7 cargo carriers for British account, 7 large tankers, 3 C-1 vessels, 4 C-2s, 3 C-3s, one passenger and cargo vessel, and one large ore carrier.

The shipyards cut down the average time from keel-laying to delivery for Liberty Ships to 70.1 days. The August average was 83.3 days.

Marinship

LAUNCHES ITS FIRST LIBERTY

FIRST VESSEL TO BE LAUNCHED at Marinship, the S.S. William A. Richardson, named after a Pioneer of Sausalito, slid into Richardson's Bay, also named after the pioneer.

MARVELOUS MARIN provided a perfect day and a perfect setting for the launching of the first hull from her big new shipyard on Saturday, September 26.

Clear sunshine prevailed, with just enough northwest breeze to make it snappy, and a good-natured, interested crowd, estimated at over 20,000, thronged the yard and adjacent hills.

The program and the launching were perfectly timed, and the big hull slid out into the blue waters of Richardson Bay smoothly and without a hitch as if she were merely repeating an often-rehearsed performance.

Speaking by direct telephone from Washington, D. C., Rear Admiral Emory S. Land, Chairman of the United States Maritime Commission, and Rear Admiral Howard L. Vickery, Vice Chairman, participated in the colorful launching ceremonies. Speakers included K. K. Bechtel, vice president in charge of Marinship; W. E. Waste, general manager; S. D. Bechtel, president of the W. A. Bechtel Co., and also head of the California Shipbuilding Corporation at Terminal Island; C. W. Flesher, West Coast Regional Director for the Maritime Commission; and Eugene J. Riley, shipfitter, representing the men who built the ship.

The sponsor for the launching was Mrs. Edward H. Winkler, wife of a Marinship carpenter; and Mrs. Ralph G. Perkins, mother of three sons working on the "graveyard shift," was matron of honor. The women were chosen by a yard committee, which in turn was selected by a drawing.

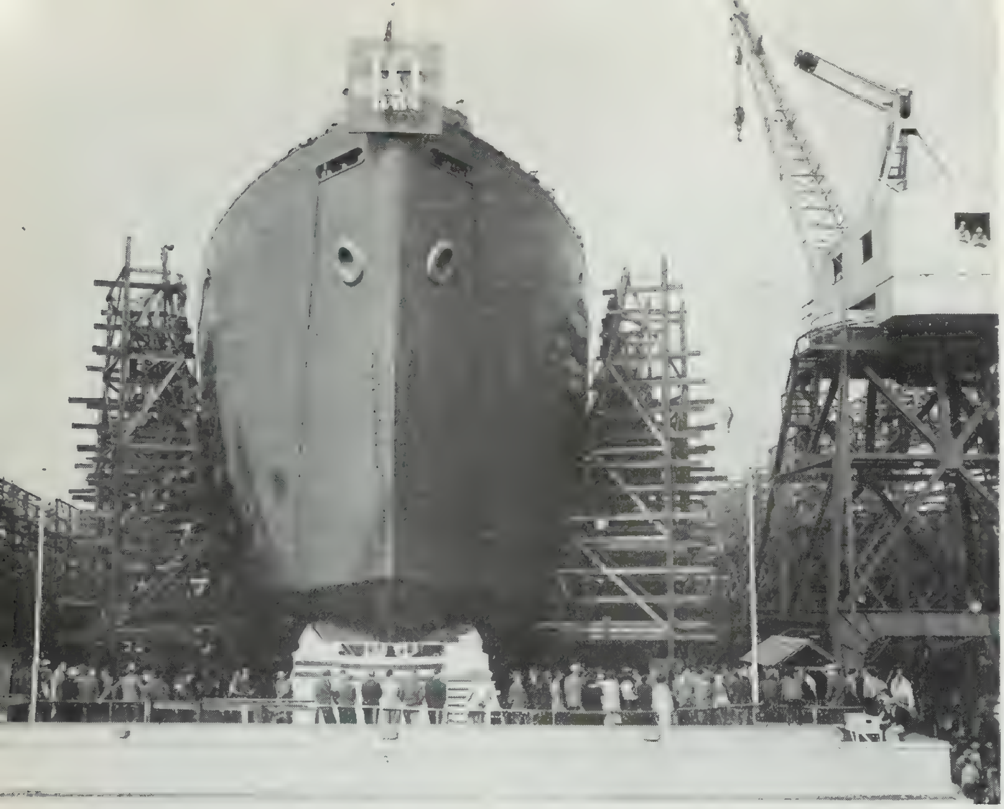
The Marinship employees' band made its initial appearance in uniform, under the direction of Ralph Murray, famed for his Exposition and Golden Gate Park bands. Joseph James, negro welder and radio singer, also took part in the program.

Christened by Mrs. Winkler with a good splash of California champagne, *S. S. William A. Richardson* slid down the ways 88 per cent complete, including all mechanical installations. It will be possible to deliver the ship to the Maritime Commission during October.

The Liberty cargo vessel is one of twelve to be built by Marinship before the yard is converted for tanker production. The *S. S. William A. Richardson* was named for the first port captain of Yerba Buena, now San Francisco. Captain Richardson operated the first ferryboat service on San Francisco Bay, and made his home at Rancho Saucelito, the site of the present shipyard being a part of his holdings.

Captain Richardson married Maria Martinez, daughter of the Commandante of the Presidio, in 1825. They had a son and daughter, and an interesting sidelight of this first launching was the attendance of two grandsons, two granddaughters, five great-grandchildren and two great-great grandchildren. That number of descendants of a name father at a launching is somewhat unique and it is a rather significant coincidence that as there were 11 of these descendants at her christening party, so there will be 11 Liberty ships succeeding *S. S. William A. Richardson* from the ways of this yard.

MARINSHIP'S FIRST LAUNCHING PARTY. Left to right: Lieut. Jerome J. Sullivan, Chaplain, U.S.N.R.; Mrs. John S. Waddell, of San Anselmo, Calif., alternate; Edward H. Winkler, husband of sponsor (he helped build his wife's launching platform); Mrs. Ralph G. Perkins, San Francisco, matron of honor; Kenneth K. Bechtel, vice president in charge of Marin Shipbuilding Division, W. A. Bechtel Co.; Mrs. Winkler, sponsor of S.S. William A. Richardson, Marinship's first vessel; William E. Waste, general manager of the yard; S. D. Bechtel, president of Calship; and Carl W. Flesher, director of the U. S. Maritime Commission, Pacific Coast Regional Office



The Ten-Day Liberty . . .

JOSEPH N. TEAL, launched ten days from keel laying and under the secret observation of President Roosevelt at Portland, Oregon, broke into national headlines in September.

Marinship Starts Soon On Tanker Construction

Some time ago, the Maritime Commission announced the award of a contract to the **W. A. Bechtel Company Marin-Shipbuilding Division,** Sausalito, California, for the construction of 22 large tankers. Marinship has a contract for the construction of 34 Liberty ships, but upon completion of 12 of these ships, the yard will build tankers.

When the Commission entered into the facilities contract with the company, it was believed that at some future date tanker construction would be possible. Consequently the outboard ways were extended and strengthened so that construction of heavier vessels could be undertaken if desired. The rate at which Liberty ships are being turned out now permits these ways to be used for tanker construction.

Under its new tanker contract, the yard will complete its first vessel in May of 1943, and the remaining 21 ships will be delivered into service by the end of the same year. The vessels, which are of the T2-SE-A1 design are 523 feet in length, 68 feet in beam and 39 feet in depth. The Maritime Commission's ship construction program includes more than 300 tankers.

More Subchasers

The Peyton Company, 901 Coast Highway, Newport Beach, California, have additional contracts for four 110-foot subchasers. The company launched its first sub-chaser on Labor Day.

Fellows & Stewart, Inc., of Wilmington, California, also have contracts for six additional 110 ft. subchasers. This company is also doing a considerable volume of Navy conversion and maintenance and repair work.

Crane Barge Contracts

Hickinbotham Brothers, Stockton, California, have new contracts for construction of four additional sixty-ton crane barges. The company also has contracts for four seventy-four-foot steel, diesel tugs.

Wooden Barge Contracts

Three Pacific Northwest Builders have received contracts for construction of a total of twenty-six, 274-ft. ship-type vessels, as follows: Contract for twelve to Edlund Shipbuilding Company at Anacortes at a cost of $6,450,000; Contract for eight to Olympic Shipbuilders, Inc. to be built at Port Angeles at a cost of $4,432,000; and a third award of six barges to Larson Yards, Inc., Astoria, Oregon.

Wooden Tug Contracts

Contracts for 16 seagoing wooden tugs, of the V3-S-AH2 design have been awarded by the Maritime Commission to four shipyards located on the Pacific and Gulf Coasts, as follows: **Prefabricated Ships, Inc.,** Seattle, Washington, (6) at $425,000.00 each; **Astoria Shipyards, Inc.,** Santa Barbara, California, (3) at $418,370.00 each; **Remonte Mfg. Co.,** Corpus Christi, Texas, (1) at $360,952.19; and **Pensacola Shipyard & Eng. Corp.,** Pensacola, Florida, (6) at $450,000 each.

The tugs are to be constructed with existing facilities and will be 150 feet in length, can be used for deep water work and are being constructed primarily as propulsion units for wooden barges now being built.

Kaiser Builds 14-Day Liberty

Henry Kaiser and his record-breaking crew at the Oregon Shipbuilding Corporation have again achieved national headline publicity by erecting the hull of a Liberty (EC-2) cargo vessel in ten days from keel laying to launching, and delivering the finished hull just under four days later, or a total elapsed time from keel laying to delivery of 13 days, 23½ hours. This vessel was the *Joseph N. Teel,* launched September 26 and delivered September 30.

A pure coincidental circumstance that is now bearing great fruit in the way of additional publicity was the secret inspection tour of President Roosevelt, which brought him to the Portland yard just in time to witness this launching.

The production record of every Liberty shipyard in America is progressing very nicely, with Oregonship still in the lead. That yard is now producing nine Liberty vessels a month, as of July, August and September, 1942. The average days from keel laying to delivery for those three months were:

July	55.1 days.
August	45.2 days.
September	42.1 days.

This is excellent progress. The average for September is approximately 23.4% better than the average for July, and about 7% better than the average for August.

At Oregonship

MISS IRENE LONG, secretary to Rear Admiral H. L. Vickery, and sponsor of S. S. Andrew Carnegie, conversing with Edgar F. Kaiser, president and general manager of Oregonship.

The S. S. Andrew Carnegie

TAKES TO THE WATER

ON SEPTEMBER 3, at the Oregon Shipbuilding Corp. yard at Portland, Oregon, Miss Long smashed the champagne bottle on the prow of Andrew Carnegie and sent that vessel into the water thirty days after keel laying. The ship was delivered 12 days later. A steel ship could bear no more fitting name than the man who founded the modern American steel industry, and also established most of the town libraries of the United States.

THIS "COASTER" is getting afloat by the waters flooding into the basin and at Pacific Bridge yard and will soon be hauled out to the outfitting dock. For more details on the "Coasters" built in basins, see the Pacific Bridge story on page 60 of this issue.

These figures indicate that we may hope to see an average production of Liberty vessels in about 35 days, keel laying to launching. When this is achieved, we will be producing these vessels, on an average, in approximately one-half the time of the records made in producing similar vessels in World War I.

Marinship Names First Four

Names for the first four vessels to be built at the Marin Shipbuilding Division of the W. A. Bechtel Company have been approved by the Maritime Commission. The first vessel, which was launched on September 26, was named *William A. Richardson*, after Sausalito's first resident, who came to California from England aboard a whaling ship in 1823. He was captain of the projected port of Yerba Buena, and Richardson's Bay was named in his honor. The second vessel will be named *William T. Coleman*, after organizer of the famed Vigilantes, which crushed lawlessness during the gold-rush period in San Francisco. The third is to be christened in honor of the late **Congressman William Kent,** and the fourth craft will carry the name of **John Muir,** the famed naturalist in whose memory Muir Woods was named.

North Carolina Gets "M" Pennant

Awards for outstanding production in the construction of Liberty ships for the "Victory Fleet" was presented to the **North Carolina Shipbuilding Company,** Wilmington, N. C. on Sunday, August 30 by Rear Admiral Emory S. Land, Chairman of the United States Maritime Commission and War Shipping Administrator, the Maritime Commission announced.

Admiral Land, at special ceremonies at the Wilmington yard, presented the Commission's "M" pennant and flag to the yard for its record production, and later gave to the workers the labor merit badge, an individual award for excellent results in "Victory Fleet" work.

At the present time, North Carolina Shipbuilding Company has contracts for the construction of 90 Liberty Ships. Beginning in March, 1941, the company converted a barren site into a shipyard, turning out its first completed ship in less than a year after award of the contract. To date, twenty-six vessels have slid down the ways, and most of them are now in service in the war effort.

Seeks Incorporation

The **North American Shipbuilding Corporation** has filed articles of incorporation at Sacramento, stating it plans to build "aircraft reserve boats" and "any other kind of boat" for U. S. Government at a Los Angeles County site. Directors are Thornwell Rogers, Helen Fitzpatrick, and S. Ward Sullivan, all of Los Angeles.

Navy Launchings

On Labor Day, September 7, building of naval vessels reached a peak when the Navy launched or laid keels for over 150 vessels. Although the Navy would not disclose the actual number of keel layings and launchings and their sites, it was announced that the events took place in 75 municipalities of 27 states.

On September 7, as a part of the national program of mass launchings and keel layings on Labor Day, 12th Naval District Headquarters announced the following launchings and keel layings of Naval vessels for the San Francisco area:

A wooden coastal transport was launched at the **Anderson & Cristofani** shipyard in San Francisco; another wooden transport went down at the **Fulton Shipyard** at Antioch; and a steel barge was christened at the **Basalt Rock Co.** at Napa.

Keels were laid for three more steel barges at the **Independent Iron Works** in Oakland.

***On September 17,* the** *U.S.S. Ammen,* a destroyer, was launched at the **Bethlehem Steel Co.** yards, and sponsored by Miss Eva Ammen, daughter of the late Rear Admiral Daniel Ammen, U.S.N., for whom the new ship was named. Miss Ammen came out from her home in Santa Fe, New Mexico, to christen the ship.

On the same day, the *U.S.S. Lipan,* a fleet tug, hit the water at the **United Engineering Co.** yards in Alameda. The sponsor was Miss Jean Kell, daughter of Captain and Mrs. C. O. Kell, of Burlingame. Captain Kell is Supervisor of Shipbuilding, San Francisco.

On September 24, *the U. S. S. Brownson,* a destroyer, was launched at the **Bethlehem Steel Company** shipyard on Staten Island, with Mrs. Cleland F. Baxter of Upland, Calif., granddaughter of the late Rear-Admiral William H. Bronson, U.S.N., christening the vessel.

On September 26, the new aircraft carrier *Lexington* slid down the ways at the **Bethlehem Steel Company's Fall River Shipyard,** Quincy, Mass., one year ahead of schedule.

Rear Admiral Frederick C. Sherman, who commanded the old *Lexington,* which was lost in the Coral Sea battle, delivered the launching address and revealed that survivors of his veteran crew had applied 100 per cent for duty aboard the new carrier.

On September 30th, with none of the fanfare and celebration which accompanies peace-time launchings, the *U.S.S. Oracle,* a fleet mine sweeper, slid down the ways at the **General Engineering Company,** in Alameda. The *Oracle* was christened by Mrs. Sadie L. Jones, wife of the foreman laborer at the yard.

New Barge Yard at Astoria

Work started recently on the **Columbia River Packer's Shipyard** being built in Astoria, where J. A. McEachern built steam-driven wooden schooners during World War I. When completed, this yard will start construction on about $3,000,000 worth of wooden barges for the U. S. Maritime Commission.

Robert C. Larson and Adolph Lindstrom, who organized the yard and obtained the contract from the Government, appealed successfully to W. L. Thompson, chairman of the board of the Columbia River Packers' Association, for financial backing. William Wooten of the CRPA will be the yard's general superintendent. Mr. Larson will be vice president in charge of procurement and supply, and Mr. Lindstrom will be supervisor of ship construction and ways.

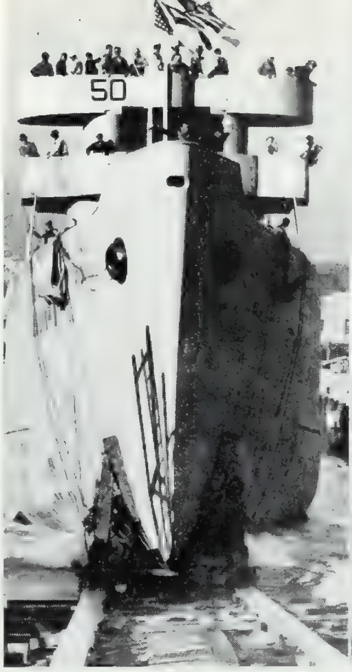
To start, the company will use three ways to build the barges, which will be 274 feet long, with a 45-foot molded beam, 26 to 29 feet deep, and will draw more than eight feet. Their dwt will be 3750 tons.

Liberty Named For Noted Negro

The first Liberty ship to be named after an outstanding American Negro was launched on Tuesday, September 29, when the *Booker T. Washington* slid down the ways of the **California Shipbuilding Corporation** at Wilmington, California, the Maritime Commission announced.

The vessel was sponsored by Marian Anderson, noted contralto. In addition to christening the new vessel, Miss Anderson sang the *Star Spangled Banner* in honor of the occasion. The address of the day was made by Mrs. Mary McLeod Bethune, National Director of Negro Affairs of the National Youth Administration, Washington, D. C. Negro delegations from California and adjoining states, including service groups, participated.

It is expected that the *Booker T. Washington* will be completed for service by the middle of October. At that time the 10,500-ton freighter will be turned over to Captain Hugh Mulzac, the only negro to hold a master's certificate. Captain Mulzac, who is 56, will sail with a crew composed of white and negro officers and men.



THE U.S.S. ORACLE, a mine sweeper for our Victory Fleet, slides down the ways at the General Engineering and Dry Dock Co. plant, Alameda, Calif.

THE ORACLE was christened by Mrs. Sadie Jones, wife of Ed "Pop" Jones, veteran employee of the yard. "Pop" Jones was first employed at the yard many years ago by Ralph Bird, the official photographer, then and now, of the yard. When "Pop" arrived for work on the first day, he didn't have his lunch, so Mr. Bird shared his lunch with "Pop." One of the most-loved and admired men in the yard, Mr. Jones has been labor foreman since he was first hired.

First Tank-Carrying Vessel Launched

A new type, secret vessel, built to carry tanks, was launched October 4 at Richmond Shipyard Number 3A much ahead of schedule, due primarily to a crane that was constructed in the yard from scrap metal. The experts told Henry J. Kaiser that a crane needed for the new ways would not be available for two years, so "we pieced together a crane of our own," explained Mr. Kaiser.

The new 3500-ton vessel represents a radical departure in shipbuilding construction and embodies many secret features. The yard, built especially for this type ship, was constructed in its entirety in 64 days.

New Contracts Moore 65 C-2s—Ingalls 30 C-3s

The U. S. Maritime Commission recently awarded the following contracts: 65 C-2 cargo ships to **Moore Dry Dock Company,** Oakland, California, and 30 C-3 cargo ships to the **Ingalls Shipbuilding Corporation,** Birmingham, Alabama. Each yard has been producing duplicates of the type awarded.

Tanker Award

An order for the construction of five 155-foot, diesel-propelled tankers was received late in August by the **Equitable Equipment Company,** New Orleans, Louisiana, from the Army Quartermaster Corps.

New Barge Yard

The California Steel Products Company, Marine Division, is constructing steel barges at the company's new yard at the foot of 16th Avenue, Oakland. E. J. Shaw is Marine Superintendent.

Crane Contract

Hickinbotham Brothers, Stockton, California, have been awarded contract by the United States Army, Service of Supply, for construction of two revolving floating cranes of 60 tons capacity each.

Another Liberty cargo steamer goes down the ways at Calship.

MARINE DEPARTMENT
AETNA INSURANCE CO.
QUEEN INSURANCE CO.
MARITIME INSURANCE CO., LTD.
FIDELITY PHENIX FIRE INS. CO.
Commercial Hull Dept.
AUTOMOBILE INS. CO.

MATHEWS & LIVINGSTON
Marine Underwriters
200 BUSH STREET · · · · SAN FRANCISCO
Offices at: Colman Bldg., Seattle · 111 West 7th St., Los Angeles

California LEADS IN INDUSTRIAL SAFETY

DESPITE AN INCREASE of more than 200,000 new war workers, California's industrial accident toll for the first six months of the year shows a decrease of nearly five per cent, it was reported.

Recent surveys by the National Safety Council, covering twenty-three of the major industrial states, revealed a national increase in the accident rate of more than 13 per cent. California shared, with only two other states, the distinction of reducing the accident average to below that of last year.

The expanded war-production program, plant conversion, training of the armies of new workers, and the readjustment of veteran workers to new jobs were held responsible for the national upswing, according to the Safety Council findings.

Much of the credit for California's record was attributed to the cooperation of war industries and to the intensive safety engineering campaign launched nearly twelve months ago by the University of California's war training program. More than 1,700 leadmen, foremen, department heads, and managers from scores of the state's war-production plants have enrolled in the war training safety courses.

Fifty-nine classes in industrial safety engineering have been given in all parts of the state since the campaign was started, with Anders J. Carlson, University professor of petroleum engineering, supervising the ESMWT safety program.

"We have worked out our program with the cooperation of the U. S. Department of Labor, with the State Industrial Accident Commission, and with the help of safety experts from industrial plants and insurance firms," Mr. Carlson said. "Men from these agencies have aided in planning the work and also have contributed their time as course instructors."

The National Safety Council report is an indication of the results so far obtained. Continuation of the educational safety work in war plants can be expected further to reduce the state's average.

Widespread use of protection equipment, including helmets, gloves, goggles, safety shoes, and, for the women, hair nets, trim-fitting slacks and similar garb, has lessened accident hazards. Safety devices, such as guard rails, machine guards, proper illumination, and fire protection all contribute to the campaign. Industry is responding 100 per cent to the spreading of a constant stream of safety educational propaganda with posters, pamphlets and oral instructions.

"Work stoppages and loss of manhours from accidents and injuries affect the production of vital war materiel," Mr. Carlson said. "Everyone should cooperate to keep the accident frequency down. Fewer accidents mean an uninterrupted flow of ships, planes, munitions and the supplies we need to win the war."

Accident Facts

Two hundred thousand soldiers, sailors, or marines could have been supplied with war equipment produced in the time lost through accidents in 1941, according to the 1942 edition of *Accident Facts,* the National Safety Council's statistical yearbook.

But this equipment wasn't produced, says *Accident Facts,* because men who could have turned it out were put out of commission by accidents just as effectively as though they had been shot down by the enemy.

A total of 102, 500 Americans were killed by accidents last year—9,300,000 injured; 350,000 permanently disabled.

Of the total accident-dead, 18,000 were killed while working at their jobs. Among the victims were many skilled and highly-trained technicians and other industrial experts. Another 32,000 workers died of accidents off the job.

"It is your patriotic duty," states the National Safety Council in *Accident Facts,* "to protect yourself and others from accidents, that the time lost from production may be sharply cut—that we may produce the weapons of war."

SHIP REPAIR

(Continued from page 55)

The new equipment and cost of expansion runs far into the millions—combined with the initial investment, the total reaches into the hundreds of millions. But these sums have been cheerfully spent—they represent that much added effort in bringing about a successful conclusion of the war.

A Proud Record

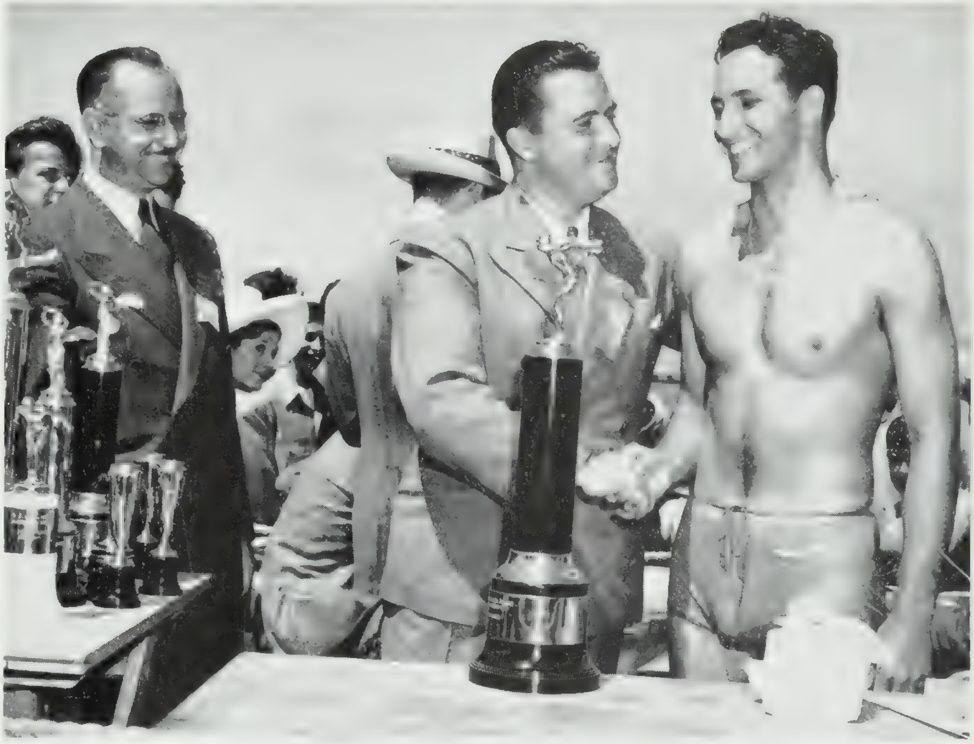
Today there are approximately 100,000 men at work in all Todd yards engaged in both construction and repair of ships. The corporation and the employees have become a unit of efficiency and speed with but one motivating idea—to keep the ships sailing. They have. During the year ending June 27, last, the Todd organization turned out 4491 ships, either in new construction, converted or repaired, equaling 15,000,000 tons. That is a lot of ship tonnage and a record of which the organization justly feels proud.

Running LIGHTS

Who When Where

"Industrial Universities"

At a recent informal gathering of Pacific Coast advertising men, J. S. ("Jim") Hines, president and publisher of *Western Machinery & Steel World* and the PACIFIC MARINE REVIEW, gave the clue to Washington's favorable attitude toward trade journal advertising as implied recently by the Treasury Department, Department of commerce, and men like Leon Henderson.


JACK ARMES, executive of General Engineering & Dry Dock Company, congratulating Fred Taioli, champion swimmer of the Olympic Club one-mile swim for men on Harbor Day. It was an A.A.U.-sanctioned event.

Mr. Hines stated: "Upgrading of employees in the early days in manufacturing companies was done the hard way. A young man apprenticed himself for years to the learning of a special labor task and after hard, practical work advanced himself little by little to top responsibility. Then came trade schools and correspondence courses, and for the few, the engineering colleges. As American industry progressed in research and refinement of products, better men, educated men, began to assume the bigger posts because of their outside training.

"Now, in the war, where it is essential for every hand that can run a lathe or ink a line to be on the job, the Government has found that the highly-technical trade journal has, in great measure, taken the place of the correspondence course—and naturally, the full-day schools. The industry journal that gives latest technical achievements that can be adapted to speeded-up production has helped convert the nation's plants to peak producers. Men are studying their industry journals at home—and they are upgrading themselves into bigger and more important jobs.

"Recognizing the new trends in industrial education, and we couldn't help but spot them because of the increase in our circulation and the greater volume of advertising which we are now running, we have streamlined both of our publications to meet the needs of the man who reads in his few leisure minutes off the job. Our format has been changed so that he can quickly pick out the articles that are of interest to him, and we use a tabloid writing technique which enables him to grasp the essential technical details quickly. Then, too, we are spending much more money on pictures and graphs. This "high lights" the reading and, all in all, makes for a much more attractive book.

"We trade journal men like to feel that we, too, are contributing to the upgrading of men—and to the speeding up of production thru new ideas. Perhaps trade papers should be suitable honored by the phrase: 'Wartime Industrial Universities'!"

"M" PENNANT AND VICTORY FLAG is displayed (center view) to the crowd of employees by (left to right) J. V. Santry, president; A. J. Moses, vice president and general manager of the company's Chattanooga plants; and Rear Admiral Emory S. Land, who made the presentation.

Combustion Engineering Earns an "M" Pennant

In recognition of outstanding achievement in the building of boilers for the Liberty ships and other vessels included in the Maritime Commission's program, Combustion Engineering Company has been awarded the "M" Pennant, the Victory Fleet Flag, and the Labor Merit Insignia for employees, by the Maritime Commission Board of Award.

The presentation of these awards by **Admiral Emory S. Land** was the occasion of a colorful ceremony at the Company's Chattanooga Plant on the afternoon of September first. **A. J. Moses,** vice president and general manager of the Hedges-Walsh-Weidner Division, accepted the "M" Pennant on behalf of the company and the employees of the plant; and the Labor Merit Insignia was acepted, for all the plant employees, by four of the oldest men in point of service. **J. V. Santry,** president of Combustion Engineering Company, spoke on the significance of the awards and the responsibilities they entailed.

Other addresses were made by **Col. Chas. Kerwood,** representing the Under Secretary of War and Chief of the Air Force, by **Representative Estes Kefauver** and by **Edward Bass,** Mayor of Chattanooga. They were introduced by **Dr. Alex Guerry,** Vice Chancellor of the University of the South. The program was further enlivened by the participation of **Greer Garson,** of Mrs. Miniver fame. Music was furnished by the Provost Marshal General School Band of Fort Oglethorpe, and **Miss Jane Moses** rendered appropriate vocal solos.

The personnel of the company have a very fine working slogan, "Pass the schedule—not the buck!"

News of the Bilge Club

As result of lots of good old-fashioned hard work on the part of Captain Theo. W. Peters, president of The Bilge Club of Los Angeles Harbor, and his aggressive Board of Directors—a highly shipshape and conveniently located new headquarters and dining room has been established at 644 Avalon Boulevard in Wilmington, California. Telephone connection is installed for messages from Bilge members—the number is WIlmington 2234. "Let's All Get the Habit—Bilgers Together for Lunch!"

At one of the daily luncheon gatherings President Peters announced that the Annual Fall Banquet would be held on evening of October 9 at the Pacific Coast Club in Long Beach—this yearly event being one of the Bilge Club's long-established activities. Committees to make the fall event a big success are already functioning—and a strong turnout is assured.

Pacific Marine Review's Los Angeles Harbor photographer dropped in the other day and shot the daily dominoers and lunch partakers in action. Where were Bert Pegg and Arthur Woll? Launching another cargo carrier—but they dropped in later in the week.

REMLER COMPANY, LTD., manufacturer of announcing and communication equipment, has been named in the first list of firms to receive the new Army-Navy Production Award. Left to right: Lieutenant-Colonel L. L. Wardell; Colonel Ira H. Treest; Mrs. Treesa Archibald; E. G. Danielson, president of the firm; and Carl A. Hemmeter. Mrs. Archibald and Mr. Hemmeter are the oldest employees in point of service.

Enterprise Rally

In commemoration of labor's huge part in war work, 1200 day-shift workers of Enterprise Engine and Foundry Company of San Francisco recently held a large "production rally". Speakers of the Maritime Commission, Navy, labor and Enterprise executives talked on the exceptional records attained and the tremendous expansion program of the Enterprise Company in building supercharged diesel engines for the United Nations.

Production of engines has increased over 1100 per cent in the last year and a huge "production chart" was unveiled showing progress to date and the big job ahead. Enterprise Engine and Foundry Company is an old California organization dating back to 1886. Starting originally as a small foundry it gradually expanded and in 1925 commenced building marine diesel engines. In 1935 the company centered its development on the turbo and supercharged marine diesel engine gaining noteworthy international recognition, and today is the largest builder of marine diesel engines in the west.

C. M. Sayre, general manager of Enterprise; Captain A. B. Court, 12th Naval District; B. F. Carter, West Coast Regional Officer, U. S. Maritime Commission; Frank Brown, Moulders' Union, A.F.L.; and Charles G. Cox, Enterprise Sales Manager.

Remler Award

Named in the first list of firms to receive the new Army-Navy Production Award is Remler Company, Ltd., manufacturer of radio and sound equipment. Recently Remler employees knocked off between the day and swing shift for colorful outdoor acceptance ceremonies conducted at the Company's plant in San Francisco.

Colonel Ira H. Treest presented the award to E. G. Danielson, president, and congratulated Remler management and workers upon their high standards of practical patriotism. He pointed out that the award was based on efficient management; avoidance of stoppages; maintenance of fair labor standards and production exceeding all expectations in view of available facilities.

Lieutenant-Colonel L. L. Wardell awarded the official "E" lapel pins to Remler employees, making symbolic presentation to Treesa Archibald and Carl A. Hemmeter, Remler's oldest workers in point of service.

Later, Remler employees were guests of the management at a dinner held to mark opening of a second Remler factory, which adds 20,000 square feet of space to present manufacturing facilities. At this dinner, Lieutenant-Colonel Wardell completed the production award by "decorating" each worker individually with the War and Navy Department "E" lapel pin for excellence in war production.

E. T. SAWYER

Bailey Appoints

Bailey Meter Company announces the appointment of **L. F. Richardson** as branch manager of its newly established Los Angeles office, and **E. T. Sawyer** as branch manager of its newly established Seattle Office. Messrs. Richardson and Sawyer had previously been located in Los Angeles and Seattle, but had functioned as representatives of the San Francisco Branch Office.

V. A. Rumble, manager of the Company's San Francisco Branch Office, continues as West Coast Supervisor.

Opening of these two additional branch offices enables the many war plants located in West Coast areas to more easily secure experienced advice and assistance regarding the proper selection, application and use of boiler room, metering and control equipment.

L. F. RICHARDSON

Maritime "M" for Naco

In recognition of outstanding service rendered, the Sharon, Pa., plant of National Malleable and Steel Casting Company was officially awarded on August 31 the U. S. Maritime "M" Pennant, the Victory Fleet Flag, and Maritime Labor Merit Insignia.

Our illustrations show the presentation of the "M" Pennant by Col. Willard F. Rockwell to First Vice President Charles H. McCrea, and the raising of the Maritime "M" Pennant and Victory Fleet Flag.

In appreciation of this recognition, Walter L. Woody, manager, stated in behalf of the Naco management and employees:

We are now joined together in a group known as Sharon Works and have been signally honored today by the Maritime Commission for exceptional production, and accept this honor, not alone for ourselves but for all those whose efforts and accomplishments in years past have made possible ours of the present.

Mr. William G. Kranz (your first Superintendent and Manager), who was instrumental in developing Naco Steel, and Mr. Fred Knadler, who developed the mechanics of chain castings, as well as many others, should be particularly remembered by us today, but most of all, do we accept this honor in the name of our fellow employees who, because they have been assigned to duty in actual combat, cannot be with us today.

May I extend to all fellow members of our organization my congratulations on your accomplishment and may the knowledge that our effort is going directly to help our sons, brothers and fellow workers who are in the armed forces; be a spur to us toward constant and extreme effort until Victory for Freedom is won.

PRESENTATION of the U. S. Maritime "M" Pennant to National Malleable Steel Casting Company at an impressive ceremony which took place on August 31 at the Sharon (Pa.) plant.

"E" Award to I. T. E.

The I. T. E. Circuit Breaker Co. has been manufacturing topnotch air-cooled circuit breakers and first-class electrical switch gear for fifty-four years. It has always been a progressive organization in the matter of design and manufacture of its products and at the same time very conservative in its policies of management and of public relations.

This organization was profoundly and yet very humbly proud when on August 10 it was cited by the Army and Navy of the United States for the award of the Army and Navy "E" Pennant for excellence in production.

This award covers not only quality and quantity of product in the light of available facilities, but also such considerations as: (1) overcoming of production obstacles; (2) avoidance of stoppages; (3) maintenance of fair labor standards; (4) training of labor; (5) effective management; (6) safety and health records; and (7) utilization of subcontracting facilities.

As an honorary symbol, this pennant says "Well done" only as of the period preceding the award. For each six months thereafter, a new appraisal is made, and if the organization has kept up the good work, a new star is affixed to the pennant.

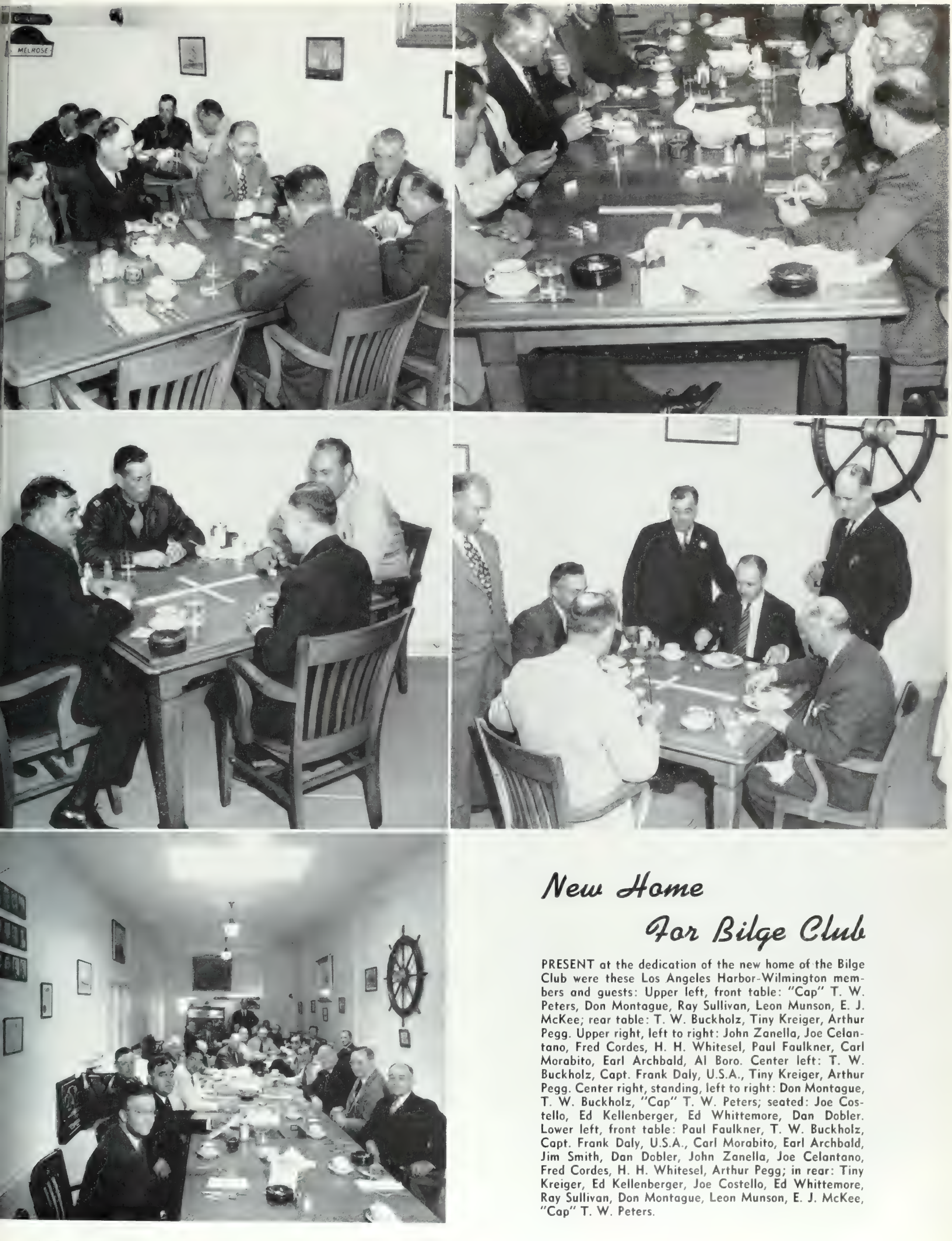
We have no doubt that stars will be affixed regularly on the I. T. E. pennant because I. T. E. during the whole of its long history has demonstrated its ability to maintain quality, meet quantity demands, and still hold throughout its organization that esprit de corps and loyalty which is so vital in successful manufacturing operations.

I. T. E. has always distributed its products through carefully selected special sales representatives. Those on the Pacific Coast are:

Oliver B. Lyman, San Francisco, Calif.

Otto Demmert, Los Angeles, Calif.

Harold M. Hudson, Seattle, Wash.



New Home For Bilge Club

PRESENT at the dedication of the new home of the Bilge Club were these Los Angeles Harbor-Wilmington members and guests: Upper left, front table: "Cap" T. W. Peters, Don Montague, Ray Sullivan, Leon Munson, E. J. McKee; rear table: T. W. Buckholz, Tiny Kreiger, Arthur Pegg. Upper right, left to right: John Zanella, Joe Celantano, Fred Cordes, H. H. Whitesel, Paul Faulkner, Carl Morabito, Earl Archbald, Al Boro. Center left: T. W. Buckholz, Capt. Frank Daly, U.S.A., Tiny Kreiger, Arthur Pegg. Center right, standing, left to right: Don Montague, T. W. Buckholz, "Cap" T. W. Peters; seated: Joe Costello, Ed Kellenberger, Ed Whittemore, Dan Dobler. Lower left, front table: Paul Faulkner, T. W. Buckholz, Capt. Frank Daly, U.S.A., Carl Morabito, Earl Archbald, Jim Smith, Dan Dobler, John Zanella, Joe Celantano, Fred Cordes, H. H. Whitesel, Arthur Pegg; in rear: Tiny Kreiger, Ed Kellenberger, Joe Costello, Ed Whittemore, Ray Sullivan, Don Montague, Leon Munson, E. J. McKee, "Cap" T. W. Peters.

Hercules in New San Francisco Home

Men of the Maritime Industry around the San Francisco Bay district are now doing business with the Hercules Equipment and Rubber Company in their impressive new building dedicated during the month of September, at 435 Brannan Street.

In this new Hercules home are vastly improved facilities for rendering fast service to the district's shipyards and other marine and industrial organizations.

Operating in the same building is a complete plant for the manufacture of molded rubber goods, rubber rollers and kindred mechanical rubber products. The Hercules firm will also produce in the new building the complete range of gaskets for which they have built up a fine reputation.

The several lines represented by the company will now be serviced under these improved administering and warehouse conditions, and shipowners and shipbuilders can now count on quick, efficient attention to their requirements.

The new building has three service offices on the main floor, so that customers are served promptly, and so that truck deliveries and pick-ups are handled speedily.

The executive and general offices are located on the second floor and have been planned along the most modern lines of both beauty and efficiency.

The Hercules Equipment & Rubber Company are distributors of a complete line of packings, gaskets and other products. Among the manufacturers represented are: The B. F. Goodrich Company, mechanical rubber goods; The Belmont Packing & Rubber Company, packings; Azor Corporation, spiral wound gaskets; Durabla Manufacturing Company, packing and valves; Melrath Supply & Gasket Company, Inc., gaskets; The Chardon Rubber Company, tube machine products; Minnesota Mining and Manufacturing Company, vegetable fiber packing; The France Packing Company, metal packings; Greene, Tweed & Company, Palmetto packings; D. B. Smith & Company, Smith-Indian fire pumps; Wil-X Mfg. Corporation, fire extinguishers; Eco Engineering Company, Eco gearless marine circulating pumps; The Toledo Timer Company, variable speed transmissions; The Q-P Signal Company, Q-P self-setting packing; Rhodes Metallic Packing Company, metallic packing; The Ohio Pattern Works & Foundry Company, valves, fittings and assemblies; and the Philadelphia Valve Company, tank truck hose reels, valves and fittings.

President P. M. (Munro) Paulsen is to be highly congratulated on this brilliant climax to the service of his organization since 1919.

Trailer Buses

Ten huge trailer buses will soon be in operation between San Francisco and the Marinship yard at Sausalito for the exclusive use of shipyard workers, it was announced recently by the Clark Transportation Company of San Francisco, which will act as agents for the United States Maritime Commission.

Two of the buses, which are manufactured by the Fruehauf Trailer Company of Los Angeles, have already been completed and all of the buses are expected to be running by November 1st. Commencement of the service awaits delivery of the buses but until all of the Fruehauf buses are operating, the Pacific Greyhound Lines will continue to maintain its temporary express bus service to the outer Mission, Ingleside, Sunset and Richmond districts.

"BY THE DEEP—SIX!"

With a strong arm, and a quick eye, and an accurately marked lead-line, the man in the chains guarded against shoals and disaster. "By the deep—six . . . and a quarter—six . . . mark seven!" he called, to show the depth of water under the keel.

Today Sharples is in charge of the lead-line in a specialized field—centrifugal engineering, pointing out the most navigable channels for its customers.

One of its many jobs is to free Diesel fuel oil and Diesel and turbine lubricating oil from impurities—by the most efficient method yet developed.

Lubricating oil does not wear out . . . it does accumulate dirt and moisture. A Sharples Centrifugal quickly and with remarkable completeness . . . removes these machinery-damaging elements . . . thus permitting the use of lubricating oil again and again.

THE SHARPLES CORPORATION

SHARPLES

Representatives throughout the world

★ *CENTRIFUGAL AND PROCESS ENGINEERS* ★
2326 WESTMORELAND STREET · PHILADELPHIA · PA.
LONDON PARIS ~~TOKIO~~
NEW YORK BOSTON PITTSBURGH CLEVELAND DETROIT
CHICAGO DALLAS SEATTLE SAN FRANCISCO LOS ANGELES

The up-to-the-minute man fights on two fronts!

YOU WOULDN'T THINK Jim Norris was a fighter. He's not in uniform. But he's buying plenty of War Bonds . . . and Christmas Seals.

Since 1907, Jim Norris and many millions of other Americans have helped us cut the TB death rate 75%! But they're not stopping now. They know TB still kills more people between 15 and 45 than any other disease . . . and that it strikes out hard in wartime.

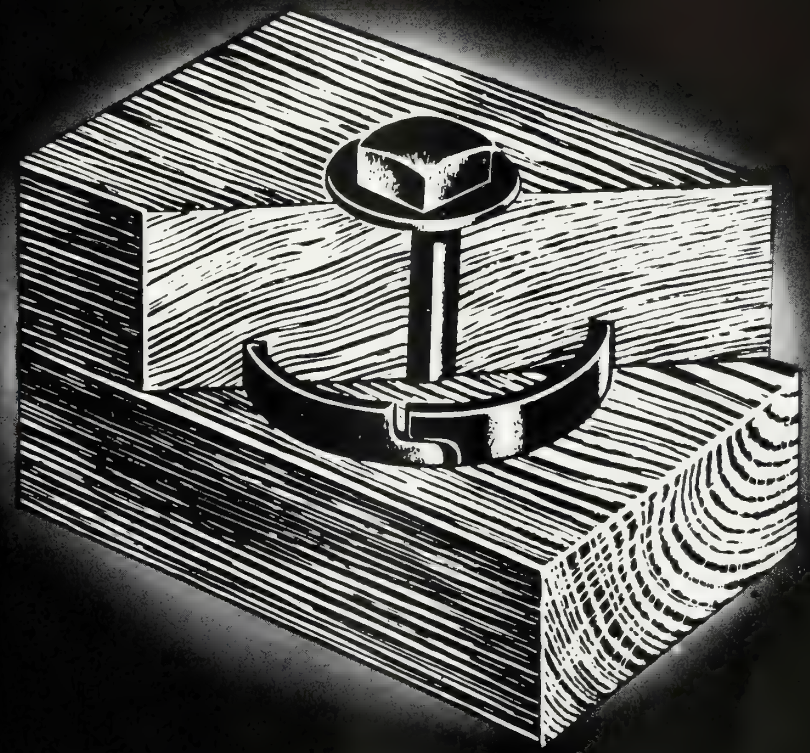
So get behind us in our victory effort, won't you? Send in your contribution today.

Buy
WAR BONDS
and
CHRISTMAS SEALS

BUY CHRISTMAS SEALS

The National, State and Local Tuberculosis Associations in the United States.

This timber joint
DOES MORE — COSTS LESS



For more than eight years TECO Timber Connector Construction has been tested by the U. S. Forest Products Laboratory and at many leading universities. The TECO Timber Connector brings into play the full stamina of each framing member by spreading the load on a joint more equally over the cross-section of the wood.

TIMBER ENGINEERING COMPANY OF CALIFORNIA
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Merchant Marine Conference Will Discuss Timely Topics

Round table discussions of vital problems affecting the Marine Industry will begin October 15 in connection with the Sixteenth Annual Convention of the Propeller Club of the United States and the American Merchant Marine Conference which will convene at the Waldorf-Astoria Hotel on that date with more than fifteen hundred delegates from all parts of the United States in attendance, according to an announcement on September 5 by Arthur M. Tode, Honorary President.

These panel meetings, which will be open for general discussion, will be presided over by many prominent leaders in the Maritime Field and will comprise the following subjects: *Education of Marine Workers,* Chairman, Professor Herbert L. Seward, of the Sheffield Scientific School of Yale University; *Publication and Press,* Joseph E. Ridder, Publisher of the New York Journal of Commerce; *Federal Legislation, R. J. Baker,* Secretary of the American Merchant Marine Institute, Inc.; *Welfare of Seamen Ashore,* Harry J. Pearson, Chairman of the National Association of Seamen's Welfare Agencies; *Finance,* L. D. Parmelee, Executive Vice President of the Atlantic Gulf & West Indies Lines; *Lighterage and Towing,* Eugene F. Moran, President of the Moran Towing and Transportation Company; *Marine Safety,* Carl E. Holmes, Chairman, Marine Section of the National Safety Council; *Stevedoring,* Captain P. B. Blanchard, President of Turner and Blanchard; *State Maritime Academies,* Ralph A. Leavitt, Chairman of the Board of Governors, Maine Maritime Academy.

Additional subjects of primary interest to the Shipping Industry will be taken up for discussion on Friday, the sixteenth.

CLOSE-UP of charming sponsor of Oregonship's Andrew Carnegie, Miss Irene Long, secretary to Vice Chairman of Maritime Commission Rear Admiral Howard L. Vickery.

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(Continued from page 89)

the influence of the wind and the sea, and blocks harbors and bays.

8. *Floe ice* consists of several pieces of field ice frozen together.

9. *Pancake ice* is merely frozen ice of sufficient thickness to prevent navigation, and is sometimes separated into pieces suggestive of the name.

10. *Drift ice* is unattached pieces of floating ice and is easily navigable.

QUESTION

How may the proximity of ice be detected?

ANSWER

Ice may be detected by the appearance near the horizon of an ice blink. This is a brightening of the sky near the horizon in the direction of the ice, caused by the reflection of light from the ice. At short distances, the brightness, or ice blink, may assume the appearance of a cloud. A warning may also be given in thick weather by a careful study of the variations of the temperature of the air and sea. A sharp lookout should always be maintained when in the proximity of ice. A dark loom will be cast by the berg in fog.

QUESTION

What proportion of an iceberg is usually below the surface of the water?

ANSWER

This will depend upon the density of the ice or upon the relative solidness of the submerged and above-water portions. Usually about one-seventh or less of its bulk is visible above the water. For this reason, always give an iceberg a wide passing distance, a portion of the berg may be only slightly below the surface and extending a good distance away from the visible portion.

QUESTION

Where may ice be usually met with the transatlantic route?

ANSWER

It is most prevalent from March to August. In March the ice field extends well south to about Latitude 40 degrees North, and the bergs begin to drift southward of this parallel of latitude.

In July the bergs are not so numerous to the south of latitude 40 North, and become fewer as the season advances, and the field ice also shrinks northward during this season. In January the field ice begins to push south again and continues to do so until it reaches its maximum southern limits in the month of March.

QUESTION

How do the bergs of the Northern Hemisphere differ in shape from the bergs of the Southern Hemisphere?

ANSWER

The bergs in the Northern Hemisphere are small in comparison to those of the Southern Hemisphere, and the northern bergs are usually rugged and peaked. The Antarctic bergs, on the other hand, are usually flat-topped and steep-sided as they originally formed part of the ice barrier of the Antarctic.

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QUESTION

What causes bergs to be broken off the great ice barrier of the Antarctic?

ANSWER

The temperature of the air above the ice barrier may be 40 or 50 degrees below zero, and the temperature of the sea, 28 to 30 degrees above zero. This difference in temperature causes an unequal expansion of the ice in the great barrier, thus causing large portions to break away and drift with the wind and currents of the ocean. Ice is most frequently sighted in the Southern Ocean off Cape Horn and to the eastward of the Falkland Islands and south of latitude 40 degrees South.

Acknowledgment: The facts contained in this article and the answers to the questions were obtained from the following sources:

American Practical Navigator by Bowditch.

Navigator's Compendium by Capt. A. J. Tellier.

Ship Officers Exempt From Draft

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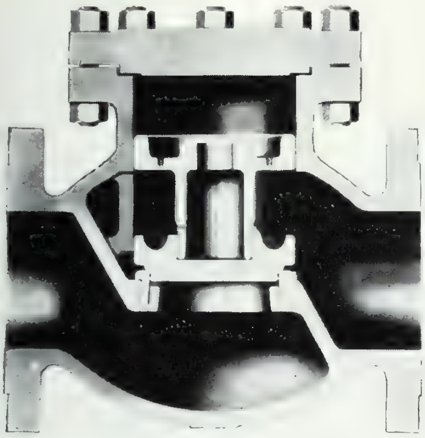

Fig. 6597 — Horizontal

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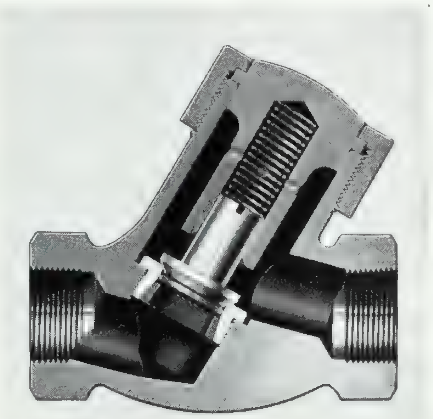

Fig. 2678 — Horizontal or Vertical

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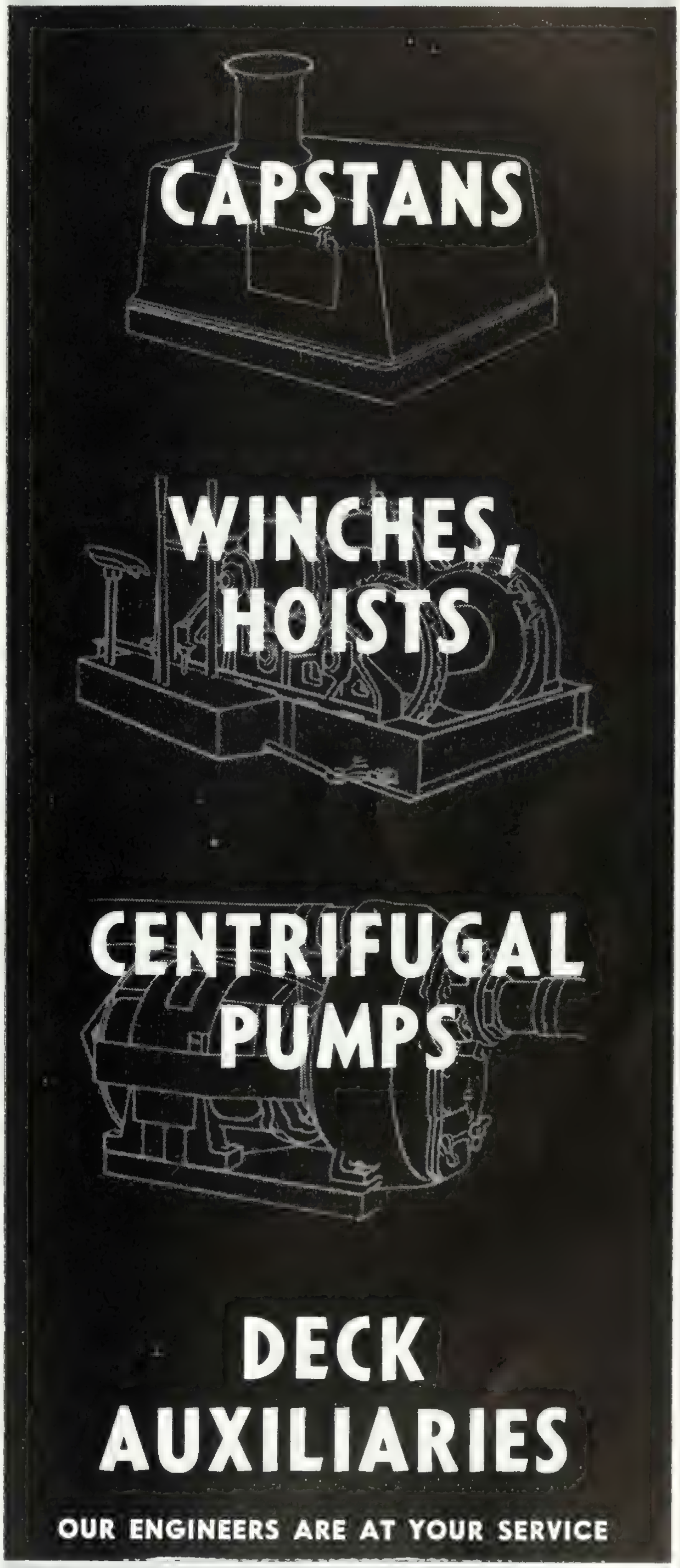

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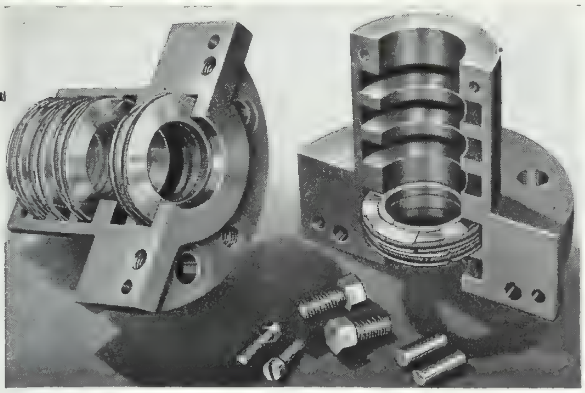

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Naval Architect: Dwight True.
Chief Engineer: Howard Varian.
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Chief Electrical Engineer: M. L. Levy.
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(Page 128, please)

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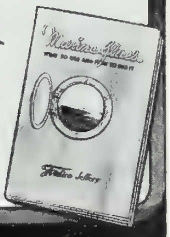

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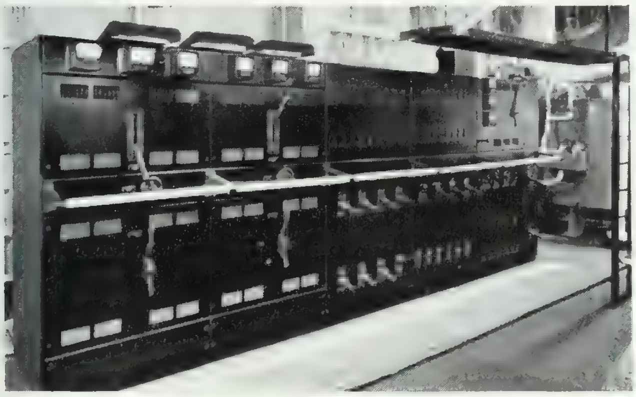

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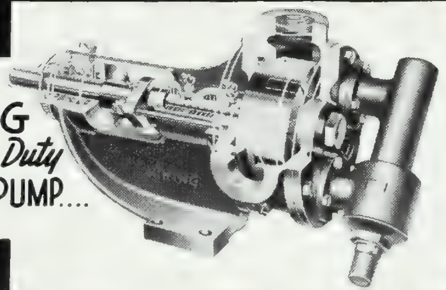

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(Continued from page 93)

Molding Machines In Nation's War Production

Foundry machines are making an important contribution in speeding the nation's war production.

Mechanization has greatly speeded up almost every foundry operation. Conveyor lines do many laborious jobs of moving molds and materials. Machines condition and deliver sand to the foundry's molding stations.

Not the least among the contributions to the efficiency of the foundry is the improvement made in molding machines, according to Russell F. Lincoln, sales manager of the machine division of The Osborn Manufacturing Company of Cleveland. The Osborn company is the world's leading manufacturer of these machines and one of the pioneers in their development.

The molding machine was revolutionary. Today on an automotive production line, a pair of these machines can turn out one engine block mold a minute.

The engine block that now comes off the molding machine is usually a six- or eight-cylinder job and vastly more complicated than the four-cylinder block formerly produced at a rate of three or four a day by hand.

Osborn alone makes 110 different types and sizes of molding machines, and the entire output of the plant is now absorbed by foundries using this equipment for the production of castings needed for airplanes, tanks and trucks, parts for big guns and other war materials.

One of the more difficult jobs demanded of these machines was the molding of cast aluminum cylinder heads for airplane engines.

These cylinder heads are cast with the cooling fins as integral parts. As is well known, the efficiency and performance of the radial type, air-cooled engine is largely dependent on the efficiency with which the cooling fins dissipate the heat generated by combustion.

The demand for greater power calls for larger cooling surfaces. This means more and deeper fins.

Present æronautical design requires that the heads be molded with the fins spaced five to the inch, and that many of them be 3½ to 4 inches deep. The process of drawing such a pattern from the sand without distorting the thin walls of sand between the fins called for a molding machine built to an accuracy of a thousandth of an inch.

This demand was met, and now the company is supplying large numbers of a specially designed, precision-built molding machine with working parts hardened and ground. These machines are capable of operating with less than one thousandth of an inch variation in the pattern draw stroke.

Modern molding machines are playing an important role in making possible the mass production of many other precision parts, parts which meet the rigid inspection requirements necessary to qualify for a place in the finest airplanes built in the world today.

NEW MOLDING MACHINE being examined by Franklin G. Smith, president of The Osborn Manufacturing Company, and R. F. Lincoln, sales manager of the molding machine division.

"Thumb-Spray" Attachment For Extinguishers

Some fires, such as magnesium incendiary bombs and certain industrial fires, are fought with a spray as well as a solid stream. Most standard fire extinguishers, however, discharge only a solid stream. Consequently, a "Thumb-Spray" nozzle attachment has been developed by the Pyrene Manufacturing Company for converting present extinguisher equipment to wartime needs. It simply clamps over the ⅜-inch hose and nozzle of any standard soda-acid, foam, gas-cartridge, or pump-tank fire extinguisher.

The "Thumb-Spray" is a permanent attachment made of spring steel with a deflector edge which influences the range and distribution of the spray for maximum effectiveness. This safety device is a constant reminder to the operator to use a spray on certain industrial fires which can be approached within 6 or 8 feet, or to speed the burning and disposal of a magnesium bomb. It is always ready; no adjustments are necessary. Its forceful, well-distributed spray of maximum safe range supplies adequate moisture and wets down immediate surroundings against the spread of fire.

The normally solid stream is converted into a spray by applying pressure with the thumb at the end of the attachment. Since this conversion takes place only after the liquid leaves the nozzle, the extinguisher itself is not affected. Operating pressures, chemical reactions or normal streams are not impaired.

Viking Cargo Units

Built to order, in many mounting styles and arrangements, the Viking cargo pumps in capacities of 45,000 and 63,000 gph are being used to speed up the loading and unloading of barges, tankers, storage tanks, etc.

Units of this type include the heavy-duty style Viking rotary pump, complete with valve on head if desired, and connected to gasoline engine, diesel engine, or electric motor by means of totally enclosed back gearing ruggedly supported with end thrust bearings, and all mounted on rigid structural steel reinforced base.

A popular unit of this line is the Heavy-Duty Viking with valve on head (enabling closing of discharge line without stopping pump); pump equipped with liquid-cooled stuffing box to enable long and continuous pumping service; thrust bearing supported back gearing; connected to diesel engine by means of flexible coupling; and structural steel base unit mounting.

These pumps are self-priming and strip tanks dry without additional equipment. Units of this type can be furnished under priority.

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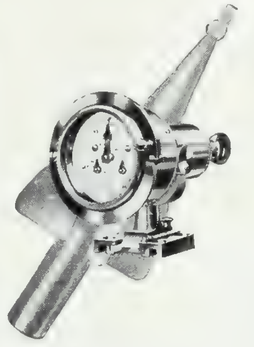

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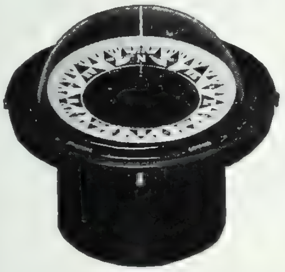

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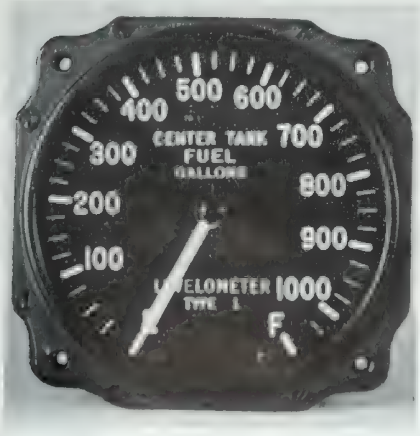
The Type "L" Levelometer

During the last few years, there has been a decided trend toward small fast vessels of special design by our Navy. These boats were a natural development of the radical changes that have occurred and are still developing in the art of naval and aerial warfare. These modern vessels, such as mosquito boats, have terrific striking power and depend on speed and maneuverability to launch their torpedos and get away from the enemy.

Due to the terrific driving power of these boats and the sharp turns which occur when they are in combat, the hull is subjected to extraordinary stresses. Consequently, all instruments on board are called upon to withstand great vibration and unusual shocks.

About three years ago, the Liquidometer Corporation in conjunction with the engineering personnel of the builders of these new motor torpedo boats developed a special dial type hydrostatic fuel level indicator for accurately gaging the fuel tanks on these vessels. Combining the proved features of their well-known aircraft fuel level indicator plus the sturdy internal mechanism of their marine and industrial Levelometer gages, the corporation built the Type "L" Levelometer for boats of the motor torpedo boat class where panel space is limited and the amount of fuel remaining in the fuel tanks is a very vital factor in the striking power and get-away of this new improved arm of our Navy.



LEVELOMETER

This modern dial type hydrostatic gage is not to be confused with old style hydrostatic indicators, with all their troubles and service problems. The Type "L" Levelometer was designed and built for its job and has proved its merits bv its performance in the most practical marine accessory testing laboratory in the world, the modern PT motor torpedo boats. Tests have shown that mosquito boats when under full headway and in actual combat are subjected, during certain maneuvers, to a greater strain than a dive bomber coming out of a dive. The onlv part required in the tank of this efficient fuel level gage is a ¾" pipe inserted in the tank and connected to the indicator by ¼" tubing. The dials are black with luminous graduations.

While the Type "L" gage was originally built and designed for mosquito boats, it has since been used and is constantly being supplied to various yards for use on other vessels such as mine sweepers, crash boats, mine layers, rescue boats and also various classes of privately-owned and -operated vessels, up to and including large size yachts.

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George E. Swett & Co., engineers of San Francisco, announce that they have recently been appointed sales agent for the National Engineering Products Inc., of Washington, D. C.

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Tempseal, a refractory and insulating cement for interior or exterior use in masonry work;

Rodpax, a soft plastic packing material in four standard grades that covers practically every packing problem;

Gage Pressure Equalizers, a simple equalizer and pulsation damper that has no moving parts, lasts indefinitely, and has no maintenance problems;

Pressure Gun, a hand- or foot-operated pressure pump designed for the economical and efficient application of Copalite;

Nepro, a high-quality valve grinding compound;

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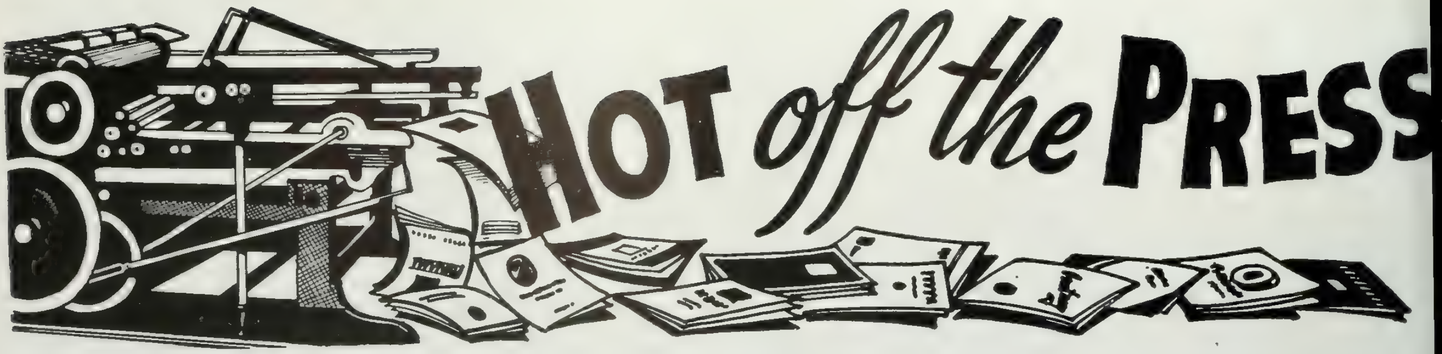

The Catalogs of Today Become the Technical Handbooks of Tomorrow

How To Repair Valves, a new bulletin on piping pointers (No. 5 in a series) just issued by Crane Co., Chicago. It explains and illustrates the various steps to take in repairing leaky gate and globe valves, as well as hints on how to reclaim discarded valves.

All valves wear out in service, but this bulletin enables the users of valves to get better and longer service by keeping them in good operating condition. This subject is most timely in these days of maximum industrial production when valves, like other piping materials, are not always easy to obtain.

All maintenance men, operating engineers, pipe fitters, and plant executives should have a copy of this valuable shop bulletin. It will be mailed on request of any Crane branch, or to Crane headquarters, 836 S. Michigan Ave., Chicago, Ill.

Opposed Impeller Series Pumps: Two-stage centrifugal pumps of the opposed impeller design are described in this 12-page catalog issued by the De Laval Steam Turbine Co., Trenton, N. J. In this type of pump, both impellers are of the single-suction type, the suction openings facing outwardly, so that axial thrust is balanced. Only two pairs of wearing rings are required. The casing is so arranged that both the suction and discharge nozzles are in the lower half, and all parts of the pump are accessible and can be removed upon removing the casing cover. This type of pump is listed for capacities from 50 gallons per minute to 1500 gallons per minute, and for heads from 80 feet to 800 feet.

A-C Welders for Unionmelt process, a new 8 page booklet (B-3090 7-N-20), describing ac welders for use with the Unionmelt process to speed industrial production, is announced by the Westinghouse Electric and Manufacturing Company.

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(Continued from page 122)

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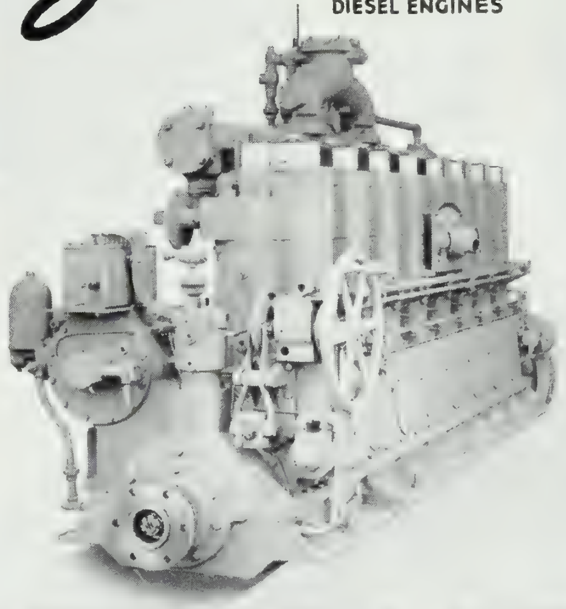

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Electric Galleys for Small Ships (Technical Bulletin TB-40), a comprehensive study of the cooking needs and requirements for small craft, has just been published by the Edison General Electric Appliance Company, Inc., Chicago, manufacturers of Hotpoint-Edison Marine Cooking equipment.

This new publication, of which a limited edition has been made available to marine architects and designers, is a manual of detailed plans and specifications for their guidance in designing the galley equipment for subchasers, tenders, patrol boats, mine sweepers, mine layers and auxiliary craft of all descriptions included in the great naval construction program now under way in Atlantic, Pacific, Gulf, and inland shipyards.

In addition to floor plans and layout for galleys best suited to each class of ship, the book contains wiring diagrams, specifications, and operating characteristics of the specially designed equipment, such as ovens, ranges, and fry kettles. Featured is the latest direct-current equipment which, like all Hotpoint-Edison products, is designed to meet the rigid specifications and requirements of the U. S. Navy and the Maritime Commission.

The manual will be sent without charge to interested marine architects and shipbuilders on receipt of requests.

BOOK REVIEWS

Modern Marine Pipe Fitting, by Emil M. Hansen; 435 pages, with numerous drawings, diagrams and tables; bound in black buckram with gold stampings; published by the Cornell Maritime Press, New York. Price $3 net.

Emil Hansen is the chief piping estimator of the New York Shipbuilding Corporation and an instructor in the Camden County, N. J. vocational schools.

This book puts into simple, easily understandable language the art of fitting pipes into ships. The modern ship, even of the simple cargo type, has many miles of pipes in its pipe systems, which include: drinking water, wash water, fire-fighting water, bilge water suction and discharge, main and auxiliary steam, fuel oil transfer and feed, feed water system, lubricating oil transfer and feed, sanitary flushing water, hydraulic and pneumatic. A modern warship may contain 50 miles of pipe.

To get this piping into the hull in neat shipshape fashion and so connected and interconnected that it all functions properly, no matter what position may be assumed by the hull—that is the art of the marine pipe fitter. The trainee or the master pipe fitter will find it all set forth here so that "he who runs may read."

Diesel Vehicles, by F. J. Camm; 104 pages, 5"x8½"; numerous illustrations; bound in red buckram with gold stampings; published by the Chemical Publishing Company, Inc., Brooklyn, N. Y. Price $2.00.

This is the first American edition of a British handbook on the operation, maintenance and repair of the diesel engines used in motor vehicles. It deals almost exclusively with European engines, but has much practical material for the repair and maintenance men who keep diesels running.

Almost all American-made diesels have European ancestry, but in all cases the designs have been altered to conform to American manufacturing standards. Just so in publishing European books, and particularly practical books on technical subjects, the abbreviations and nomenclature, should be changed to American practice.

Practical Mechanics Handbook, by F. J. Camm; 400 pages, 5"x8½"; 390 illustrations; bound in blue buckram with gold stampings; published by Chemical Publishing Company, Inc., Brooklyn, N. Y. Price $4.00.

This is an American reprint of the fourth edition of a standard British handbook for mechanics. It is well arranged and will be of great value to anyone desiring to be a practical, all-around mechanic. Practical kinks and solutions for all types of problems that come up daily in shop practice abound in this book.

The Unknown Country, by Bruce Hutchison; 350 pages, 5½" x 8½", with photographic illustrations; bound in red buckram with gold stampings; published by Coward McCann. Price $3.50.

This is a very interesting book about "Canada and Her People" by a Canadian reporter and author who is a recognized authority on the political and economic affairs of his native land. His assignments as a reporter have taken him to practically every corner of Canada many times, and he writes as one having an intimate knowledge of his subject and a mastery of English prose.

The history and evolution of Canada and the present trend in her political and industrial development are sketched against the dual psychology of her people and the wild beauty and variety of her great open spaces.

Cargo Loss and Damage, by Captain Myron E. McFarland; 150 pages; 6 specimen forms; comprehensively indexed; published by Cornell Maritime Press, New York. Price $2.00.

This is a very useful handbook for the shipper, the underwriter, the steamship operator, the master, the underwriter's representative, and all who are interested in cargoes.

The complicated business of surveying cargo damage and loss is here explained in simple, lucid style, and yet with careful attention to every essential detail by an expert who is a thorough master of the art of marine surveying.

Sailing to the Sun, by Howard Bloomfield; 270 5½" x 8½" pages; photographic illustrations by author; bound in blue buckram with gold stampings; published by Dodd Mead & Company, New York. Price $3.00.

A very interesting account, interspersed with humorous and caustic comment on nature and man, of the cruise of a sloop from Long Island to Florida by the Inland Waterway.

The author, his wife and baby, and his father, a typewriter, a Scotch terrier and numerous other items are loaded into a 30-foot sloop and set forth to feel their passage for the 1379 nautical miles of inland or island sheltered river and seaways that form what is known as the Inland Waterway from New York to Miami. Some adventure, much sport, and many humorous situations make this a very readable tale.

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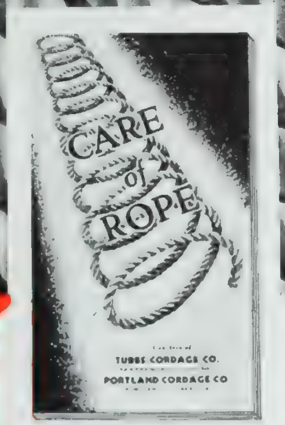

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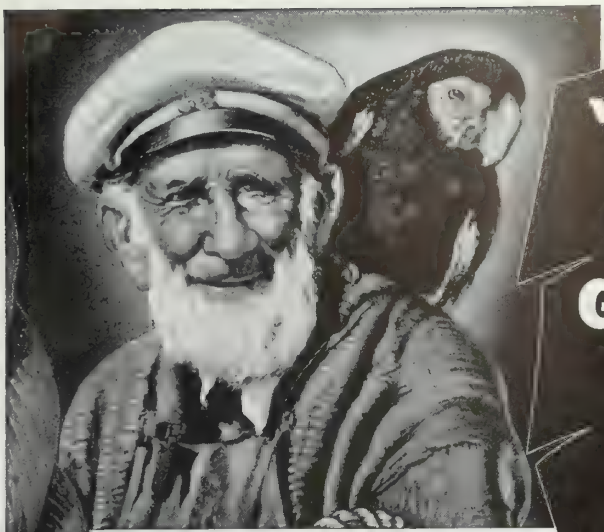

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Pacific Marine Review

The American Maritime Council

AN APPRAISAL OF ITS FUNCTIONS AND PURPOSES

by J. E. Otterson, Chairman
American Maritime Council, Inc.

THE AMERICAN Maritime Council has been formed for the purpose of surveying all of the factors relating to the future of American shipbuilding and shipping industry, and of developing plans and recommendations relative to the future of these two interrelated industries as a guide to the determination of private and public policies.

The Council has been incorporated and funds for its operation have been subscribed by the shipbuilding and ship operating industry so that the Council is proceeding under private auspices.

The results of the work of the Council should be an expression of the views of the maritime industry itself as to policies necessary to the future of the American merchant marine, and it is hoped that the conclusions and recommendations of the Council will be of value to the Maritime Commission, the Congress and the Government.

It is also hoped that the Council will provide a channel for more complete and organized cooperation between the maritime industry and the Government in working out the future destiny of the American merchant marine.

Study of the problems and the development of plans now may prevent chaos and provide for orderly progress upon the termination of the war.

The American Maritime Council contemplates extending its studies to cover our water-borne foreign commerce, ship design, ship operation and ownership, marine insurance, admiralty law, banking and finance, and public relations, thus covering every related branch of the shipping industry.

The study of our foreign commerce is perhaps the first step in any survey. For this purpose a committee has been formed, of which Dr. Henry Francis Grady is Chairman. This committee has been fortunate in securing the cooperation of the National Foreign Trade Council and the services of Dr. Alexander B. Dye, its expert on foreign and domestic trade.

The American Maritime Council is assured of the cooperation of the various groups of the shipping industry represented in its membership, namely: ship owners and ship operators, the American Bureau of Shipping, the American Merchant Marine Institute, the National Foreign Trade Council, the National Council of American

Shipbuilders, the Society of Naval Architects and Marine Engineers, the Propeller Club, marine underwriters, admiralty attorneys, financial institutions and Governmental agencies, including the United States Maritime Commission, the War Shipping Administration, and the Navy Department, all of which have a fundamental interest in the successful future of the American Merchant Marine. In addition to the groups mentioned, the Council is also assured of the full cooperation of such important educational institutions as the Massachusetts Institute of Technology, the Harvard School of Business Administration, and the Webb Institute of Naval Architecture.

Committees have been formed by the Council to deal with each of the subjects under consideration. The chairmen of these committees have been drawn from the membership of the Council, and the secretaries of such committees constitute the staff of the Council.

The importance of shipping to the war effort has been indelibly impressed upon the public mind in this war, and we have recovered somewhat from the lapse of memory that we had after the last war. I think we have come to realize as well that we cannot have an adequate fleet of merchant and naval vessels without adequate shipyards to build them. The delays incident to providing these shipyard facilities as a mere act of war and in the stress of war have postponed most painfully the victory necessary to our continued existence as a free people.

This is a war between the great maritime nations of the world. It is primarily and basically a struggle for the domination of world trade. It will continue after the war. We are no more prepared to meet the test of peace than we were to meet the test of war, and if we take as long to prepare for peace as we are taking to prepare for war, we shall lose the peace.

The Axis powers abandoned the ways of peace and resorted to the force of war, believing that this course was the shortest route to world domination and the control of world trade.

When they shall have failed in their purposes, they will turn again to the peaceful process with all the desperate energy of a defeated people struggling for existence and appealing to the sympathies of their soft-hearted foes to mitigate their just punishment, alleviate their suffering, and assist them along the road to recovery.

Among nations as among individuals, the fat body all too frequently goes with the fat purse. We shall end this war with a lean purse. Let us pray to God that the training for war will be rigorous enough to leave us with lean bodies.

I presume that a poll of the maritime industry would reveal an almost unanimous opinion in favor of private ownership and operation of ships. This is so obviously essential to the maintenance of that degree of initiative, resourcefulness, and resolution necessary to the attainment of any sort of competitive position in the world of commerce, that I need not enlarge upon it.

We should end this war owning one half of the merchant tonnage of the world. If history repeats itself, within twenty years, half of this tonnage will have come under foreign control and we shall again be an indifferent and insignificant maritime nation.

This vast fleet now in the making will directly or indirectly be under the control of the Government, and the transition from this to private ownership presents a major problem crying for solution—it is not easy.

Its accomplishment will require the utmost in cooperation between government, management and labor, an establishment of mutual aims, and an acceptance of reciprocal responsibilities.

The beneficent attitude of the Government and the devotion of Management and Labor unselfishly to the national cause cannot cease with the termination of the war. We must enter upon this post-war problem with all the earnestness of our war effort.

To the Government we must look for the support and cooperation that will stimulate public interest, encourage and reward personal effort and invite private investment.

We must avail ourselves of those economies and efficiencies of management that have made it possible for certain American industries, in spite of higher wage and living standards, to maintain a competitive position in the world.

Similarly, it is incumbent on labor to render that quality of service that will make possible the maintenance of American wage and living standards within the pattern of economic survival. In the long run, the number of men employed in our merchant marine will depend upon the development of a sound economy governing such employment.

To the Government, to management, and to labor alike I commend that very simple law of economics which holds that you can't get beef and milk out of the same animal at the same time.

You can't get high taxes, high dividends, high wages out of the maritime industry at the same time, any more than you can out of any other industry.

The Government, management and labor must be content with the compromises and adjustments that will serve the common cause and foster the growth and development of an industry so essential to our national prosperity and such a vital factor in our national economy.

Through the fortunes of war, we have been made the greatest maritime nation in the world—and if, through the fortunes of peace, we are to so remain, we must here resolve to do now those things necessary to be done, and to carry into our peace effort all of the resolution and unselfish devotion to the national cause that now characterizes our war effort.

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Horsepower may be developed; horse sense is a gift from God.

A Post-War Liberty Thought

Considerable concern is being manifested by shipping men over the fact that the present shipbuilding program will bring us to the end of the war with a fleet of merchant ships larger than we ever owned before and largely composed of so-called Liberty cargo vessels.

Looking backward over history of shipping values, we can easily deduce that at the end of this war any ship ready to go to sea will be worth on the ship markets of the world a price per deadweight ton pretty close to the cost of the Liberty ship.

The ordinary tramp services of the foreign trade world will be bare of bottoms. We are not interested in tramp services, except as they are operated by other nationals to feed our cargo liner services. So our common sense procedure would be to sell our Liberty tonnage on the world's ship market while that market is high and go on producing the better class steamers and motorships that are best adapted to competition in our cargo liner trades.

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That government governs best which governs least. Thomas Jefferson

An Invincible Combination

by Capt. Edward Macauley

U. S. M. C. & W. S. A.

I am a Navy man by training and inheritance, but for the past eighteen months I have been working with the civilian arm of our sea services.

The merchant marine was the first United States service in this war. Long before Pearl Harbor, our merchant ships were defying the enemy on the seven seas, frequently unescorted and unprotected. With our entrance in the war, the toll grew heavier and heavier. Many hundreds of lives have been lost, and many more hundreds who have been saved went through Hell before they were rescued. In the worst period — this spring and summer — the sinkings sometimes seemed to be more numerous than the sailings. This was our darkest hour, but the sailings nevertheless went on.

Then thanks to the operation of the Navy's excellent convoy system, the losses dropped. Together we are keeping the supply lines open, and we will continue to do so together. Escort vessels are rapidly being assigned to convoy and patrol work. In the not too distant future, no ship will sail without adequate protection. But the merchant marine will carry on its kind of fighting—sailing the ships.

This, the hardest day in the life of any naval man now living, happens to be the day America has set aside to honor the men of that service. Let us now add to that honor a special act of faith. The American Navy has fought before against odds and won. It is the same Navy. It will win again, and it will not stop until the victory is complete. As long as an enemy is left, our Navy will be in there fighting.

SHIP CONSTRUCTION "Speed King" of America, Henry J. Kaiser, is telling the nation about the new yard at a keel laying of one of the new C4-S-A1 vessels on July 22.

Richmond Number Three

THE HARBOR front of Richmond, California, is fast becoming one huge shipyard. The approach to this city from the land side now runs between solid rows of various types of housing for shipyard workers. The sleepy town, built largely around the refinery of the Standard Oil Company of California (incidentally, one of the largest refineries in the world), suddenly finds its population doubling over night, and its name blazing in the national headlines as a great war shipbuilding center.

Starting early in 1941, when Todd and affiliates chose a site on Richmond Harbor for a shipyard in which to build 30 Victory cargo steamers for the British Government, the waterfront, then a very peaceful scene of muddy flats held in between rocky hills, now becomes the locale for four huge shipyards that are turning out Liberty cargo steamers and other type ships with amazing speed and efficiency.

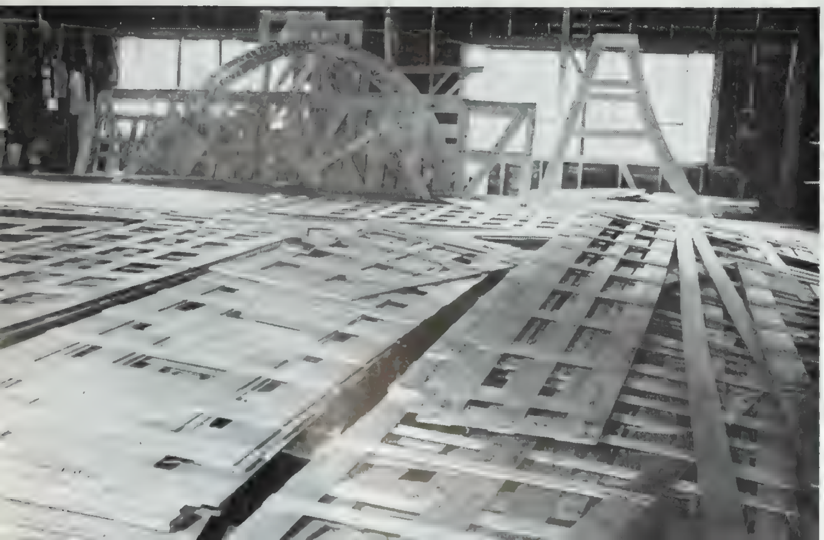
These four shipyards are now known as Richmond Number One, Richmond Number Two, Richmond Number Three A, and Richmond Number Three. The first two were designed especially for and are devoted exclusively to the manufacture of Liberty (EC-2) cargo steamers. We use the word manufacture advisedly for the process is just that. Both of these plants have been described and illustrated extensively in previous issues of this magazine.

Richmond Number Three A is a smaller yard devoted to the building in basins of a new type of mystery ship to be used by the military forces. Censor forbids all details.

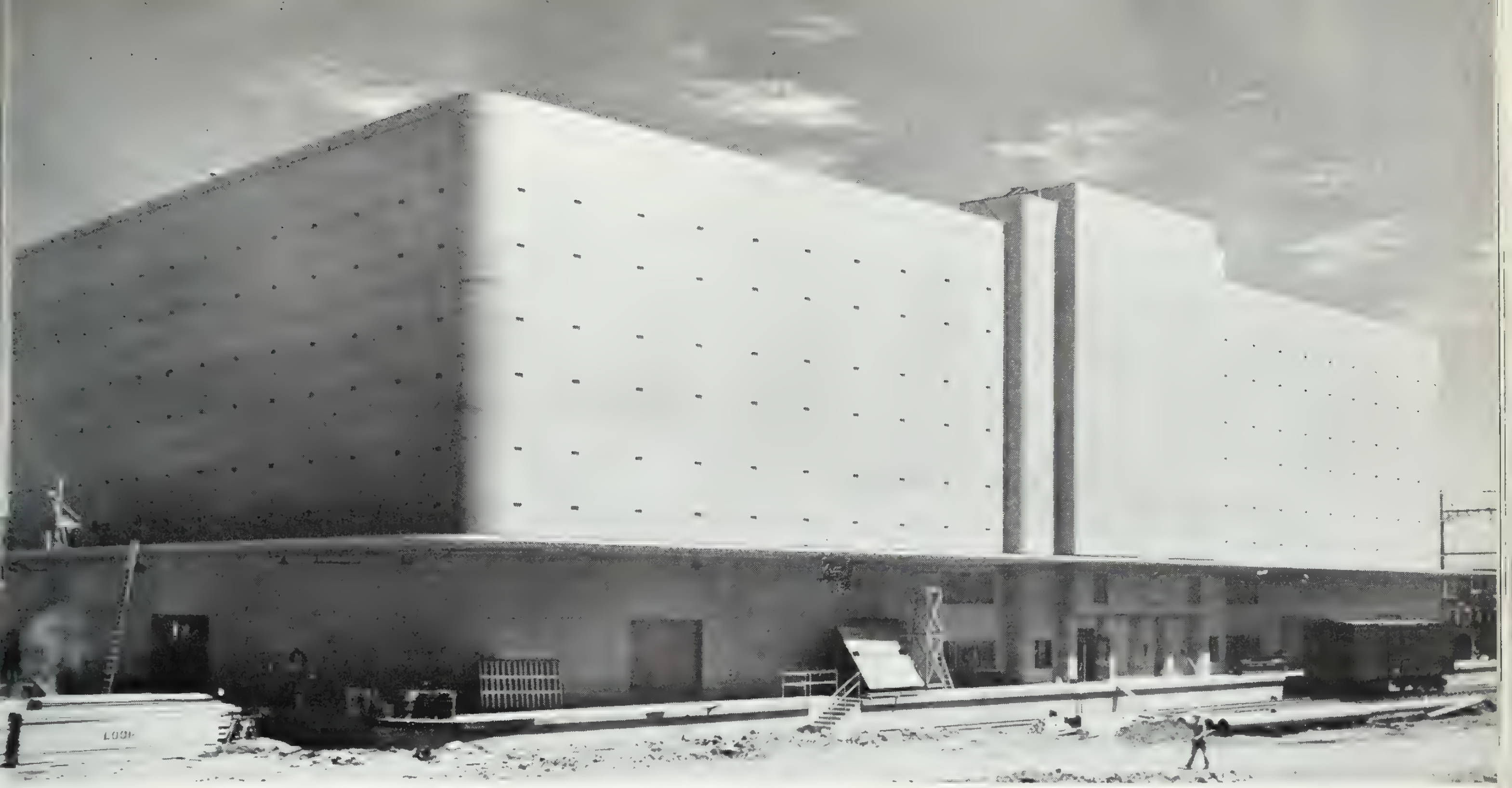
Richmond Number Three is the newest of the four yards, and into its layout and equipment installation has been poured the experience derived from the building and operating of the others. All of these yards are under the capable general management of Clay Bedford, right-hand man of Henry J. Kaiser.

Richmond Number Three is the latest of the group, but has been made the administrative center for all of the Richmond yards.

This new yard covers 126 acres, a large part of which was formerly part of a rocky hill. This hill section has been torn down, leveled off and the rock material used for fill. The layout is designed for building the Maritime Commission type C-4, which is somewhat larger than the well known C-3. As built, these vessels will be adapted to military or naval use, and when delivered, will be taken



TEMPLATES for C-4s ready on the mold loft floor by May 1.



HENRY J. KAISER AND ASSOCIATES BUILD A NEW AND DIFFERENT SHIPYARD

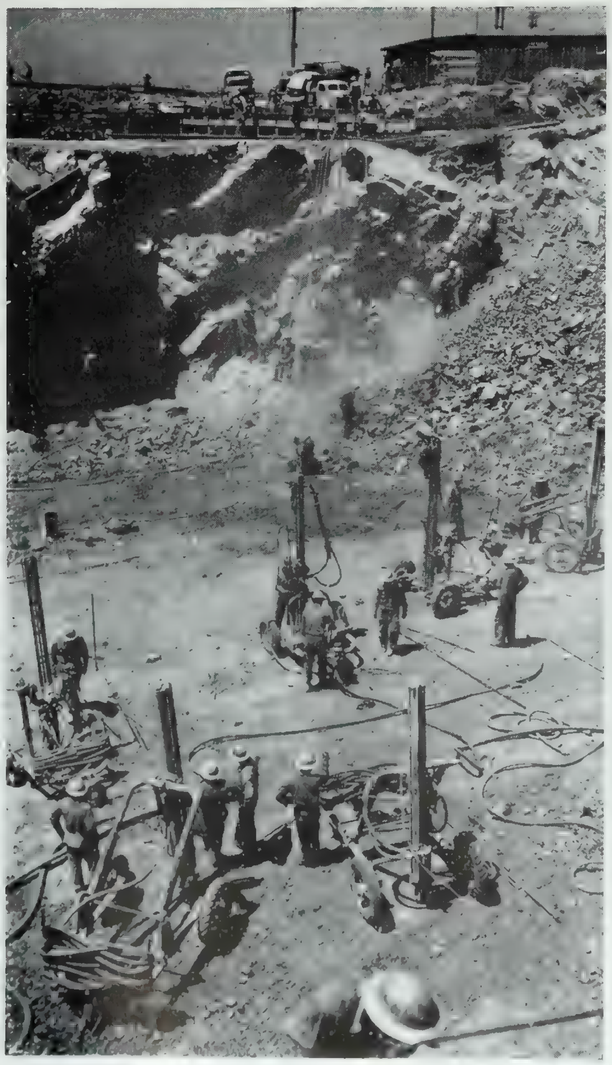
over by the military authorities. Everything in this yard is designed to expedite material handling, fabrication and assembly.

Modern technique in shipbuilding calls for fabrication and assembly of parts of the hull in huge units weighing up to the limit of the handling mechanisms. To keep within reasonable crane limits, it is advisable to avoid high vertical lifts. For this reason, and also because it is a simpler process to build a ship on level keel blocks, the Number Three yard is designed for basins instead of the ordinary inclined ways. As will be noted from our illustrations, these basins are cut largely in rock, are solidly lined with reinforced concrete, and are fitted with caisson gates at the sea end. Steel scaffolding is used in the basins. There are five of these basins.

LIKE A WORLD FAIR EDIFICE this new warehouse makes a striking appearance with its modern architectural design as shown in these two views.

DOWN GOES A HILL to make room for Number Three's five basins. The immensity of the job can be seen by comparison of the large power shovel inside the huge pit.

EXCAVATING FOR BASINS



DRILLING operations on the hard rock base of Basin No. 3 in May.

At the inshore end of the basins is an immense area of open-air welding platform for assembly of flat sections, such as double bottoms. Here we see some of the new ideas bearing fruit.

One is an immense welding jig wherein a complete section of the bottom and its floors can be spotted ready for welding. Another is a special automatic welder rig consisting of a traveling bridge which spans the double bottom assembly and carries four Unionmelt welding heads. These heads simultaneously deposit the fillet welds along the seams between two floors and the bottom plates, then the bridge is shifted along and two more floors welded.

Richmond Number Three uses many welding jigs in addition to this jig for double bottom sections. A welding jig is simply an arrangement of steel shapes and plates so disposed that they hold in place ready to be welded all the parts of an assembly and hold them in the position most convenient for speedy and efficient welding.

So as we walk over the welding racks and through the assembly shops, we note many of these huge jigs with welders busy welding assemblies of complete hatch coamings, engine foundations, rudders, watertight doors, and many other parts that go into the

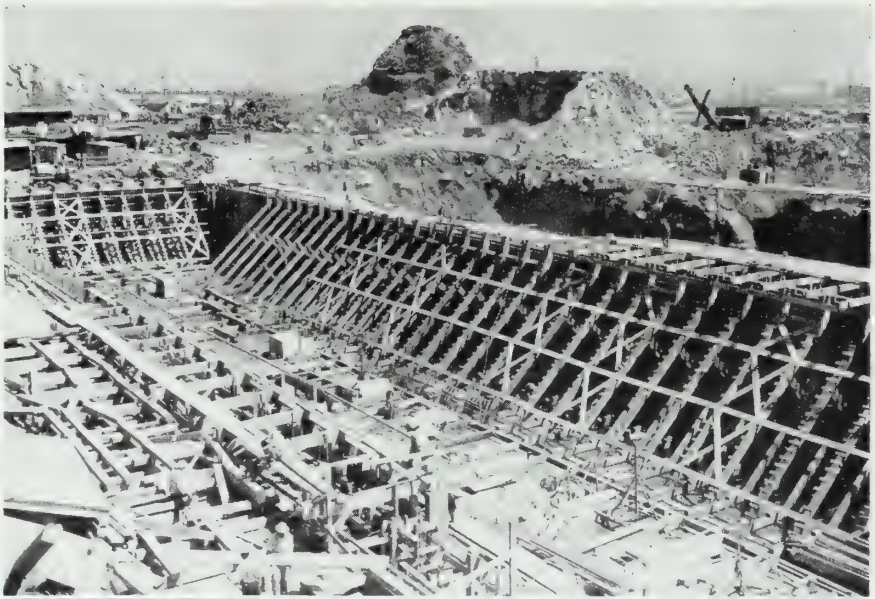
PREPARATION

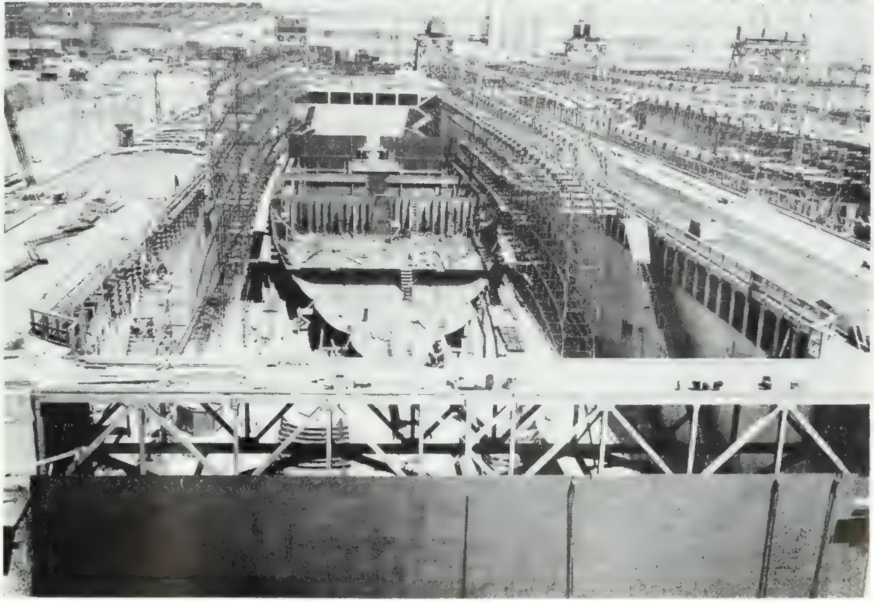
TRUCKS, MEN AND MACHINES are all working at capacity to get the basins ready (at left). The view just below shows the progress made by May 5, and the bottom view shows the progress in the same basin by July 29.

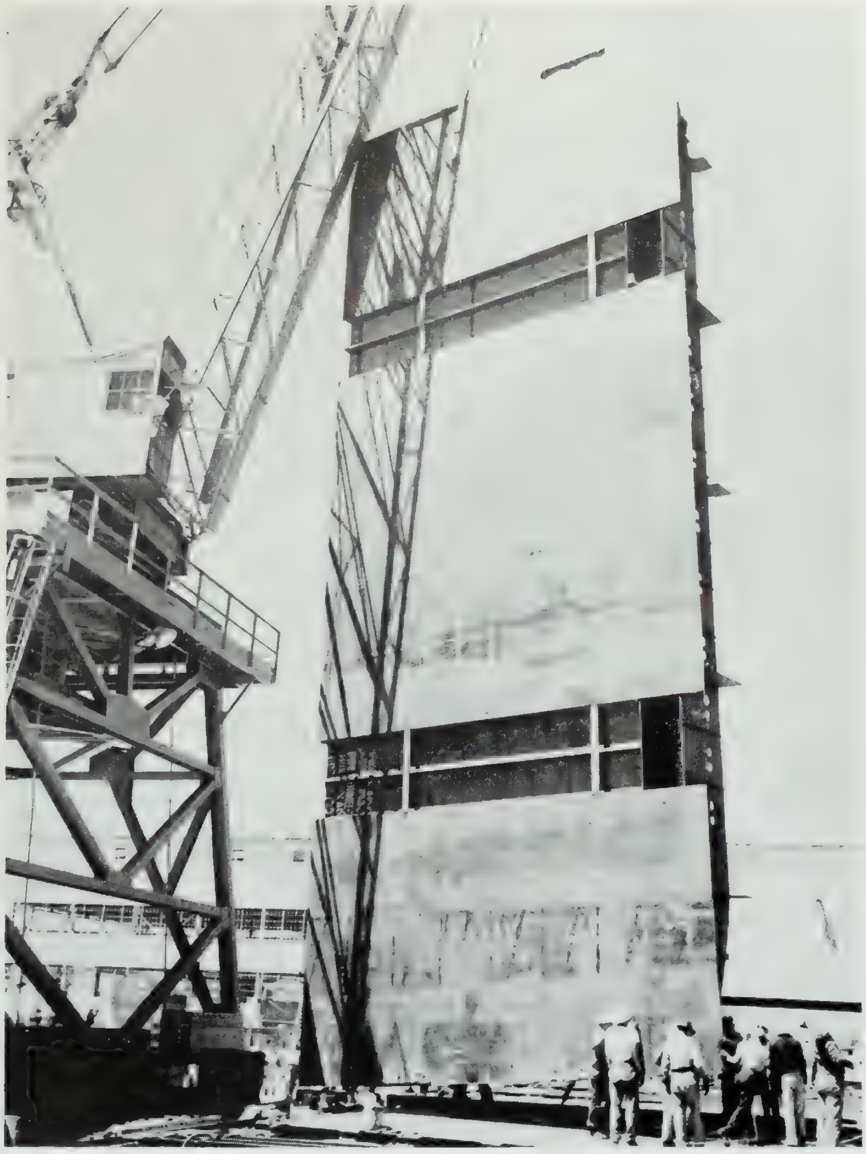
complete hull and its equipment. All of the jigs are equipped with rings to which chain slings can be hooked and the jig shifted by crane to the most convenient spot for working, or to jig storage, as the occasion demands.

Back of the welding platforms is the huge plate shop with its seven bays. Each bay is specially equipped for its own work in fabricating the various members of these big ships. A large area of bending slab and ample capacity in furnace is provided to take care of the hot shaping of frames.

In the various bays of the plate shop are installed the special tools necessary to work steel plates and shapes into the forms required by a ship's hull. Among these are: a set of heavy plate bending rolls, 38 feet long; a heavy hydraulic press brake for flanging and special sharp bends; an arrangement of roller tables served by special adjustable multiple drill bridges for drilling rivet holes, and by special automatic flame cutting apparatus for trimming. One of the characteristics of all the new shipyards that is especially interesting to the older shipbuilders is the comparatively small number of tools in the plate shop. This is due not so much to improvement in technique as to the single-purpose aim in the design, construction and equipment of the new yards.







IN THE MODERN TECHNIQUE of mass production in shipyards, the parts of a ship's hull are preassembled by welding and/or rivetting in large sections like the 62-ton double bottom shown here in process of being turned over by a big whirley crane preparatory to placement in the hull.

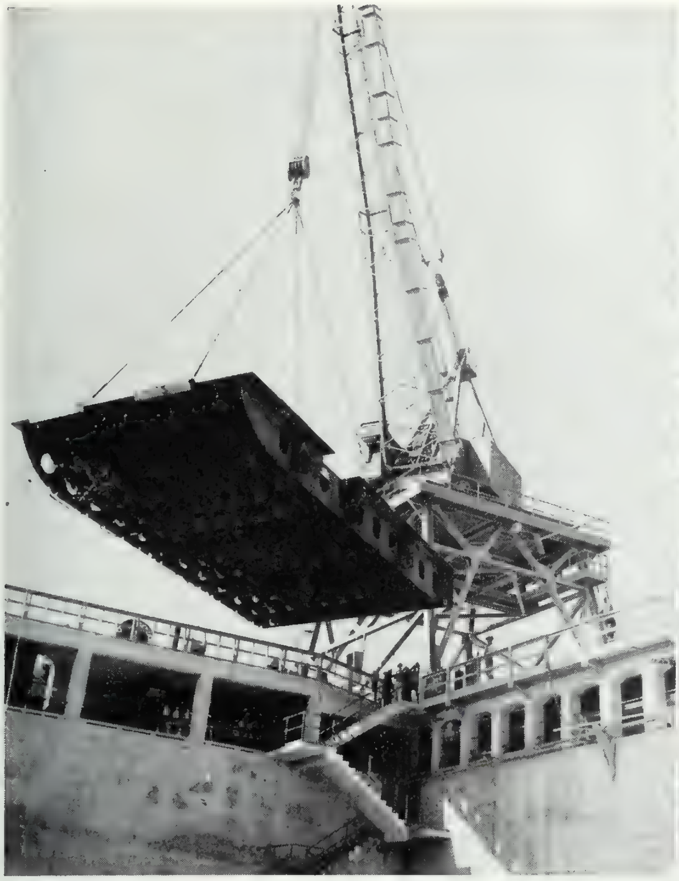
Each of these yards is for the sole purpose of manufacturing and assembling the hull of a certain type of ship. The older yards, on the other hand, were designed to build all types of ships and to repair all types of ships and hence have to be equipped with a much wider variety of tools.

An interesting innovation adapted from Pacific Coast lumber practice is used in the plate storage yard of Richmond Number Three. All plate racks are portable and stand on special skids. An especially designed Hyster Carrier picks up these skid loads of plates and spots them at any desired point in the yard, much more speedily and efficiently than such a shift could be accomplished by any large crane.

One of the most important timesavers in the preassembly technique in the new shipyards is the practice of installing during assembly all of the accessories and equipment that pertain to the particular hull part that is being assembled. Thus it will be noted in the illustration showing a section of double bottom being lowered into the building basin, that the pipes are in place.

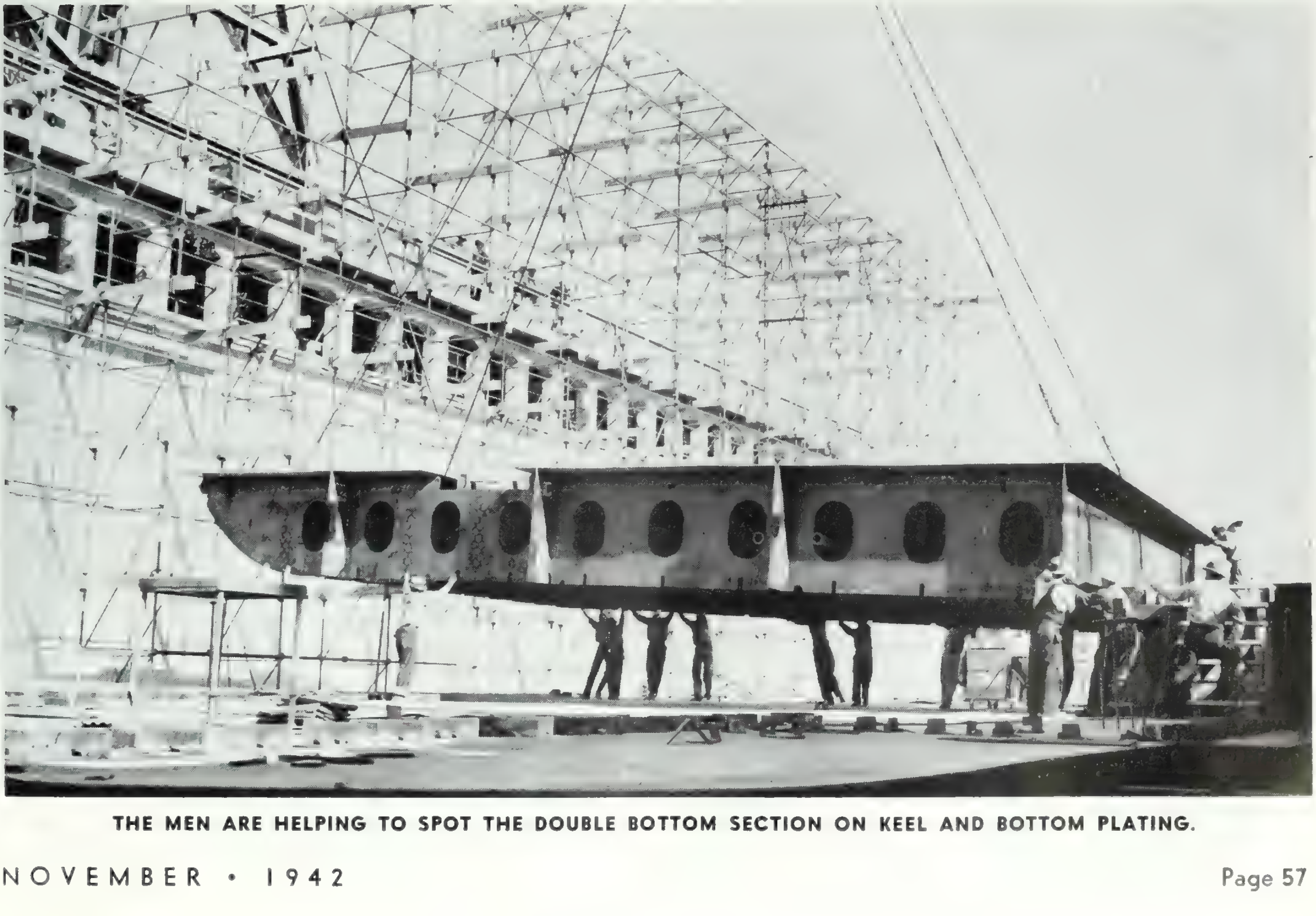
This complete preassembly saves many man hours spent in fitting and installing in the structurally complete hull. A large shop located between the Richmond Number One and Richmond Number Two yards has been equipped solely for the purpose of preassembling sections of the deck houses of ships. In this shop, the assembly includes every fixture complete even to the finish paint job. All plumbing, wiring, heating, ventilating, lighting fixtures, wardrobes, standee berths, instruments, steering apparatus, fire prevention and detection, refrigeration, steam piping. In short, everything to make the deck house complete is fitted and installed in this shop. This is one of the main factors enabling these yards and yards with similar equipment to break all records in time consumed in the installation of equipment after launching.

This preassembly technique has been adopted for pipe shops, which especially in the Richmond yard Number Three are vastly different from pipe shops in the older yards. In the pipe shop at Number Three there is set up a complete full-size model, or mock-up, of the engine room of the C-4. On the floor and the bulkheads of this engine room, accurate mock-ups of each piece of engine room auxiliary machinery and of the main power plant are accurately spotted. The position of every flange connection is shown just as it is in the ship. Pipes are cut, bent, and fitted to these mock-ups in multiple. In other words, if you have 20 or 200 identical ships to build, you make each piece of 20 or 200 identical units of any piping system. There is a lot of piping in modern steamers. Each Liberty (EC-2) vessel has about six miles of piping. Each C-4 will probably have about nine miles. There are many systems of piping, each with its own requirements as to size and material of pipe, type of joints, and radii of



BIG WHIRLEY CRANE brings the double bottom section to the basin wherein it is lowered slowly.

THE DOUBLE BOTTOM section is now nearing the keel. Note piping already installed in these sections.



THE MEN ARE HELPING TO SPOT THE DOUBLE BOTTOM SECTION ON KEEL AND BOTTOM PLATING.

PLATE AND ANGLE shop seen through the legs of a big Whirley crane in the storage yard.

curvature. Among these systems are: the main high-pressure steam; the auxiliary medium-pressure steam; the heating and cooking low-pressure steam; the salt sanitary water; the fresh drinking water; the fresh washing water; the fuel oil; the lubricating oil; the salt water fire; and the bilge. It can be readily appreciated that the making of all these systems of piping in orderly fashion in a shop would save thousands of man hours over the disorderly method of fit and try in the ship's hull, where a lot of other work would be going on at the same time.

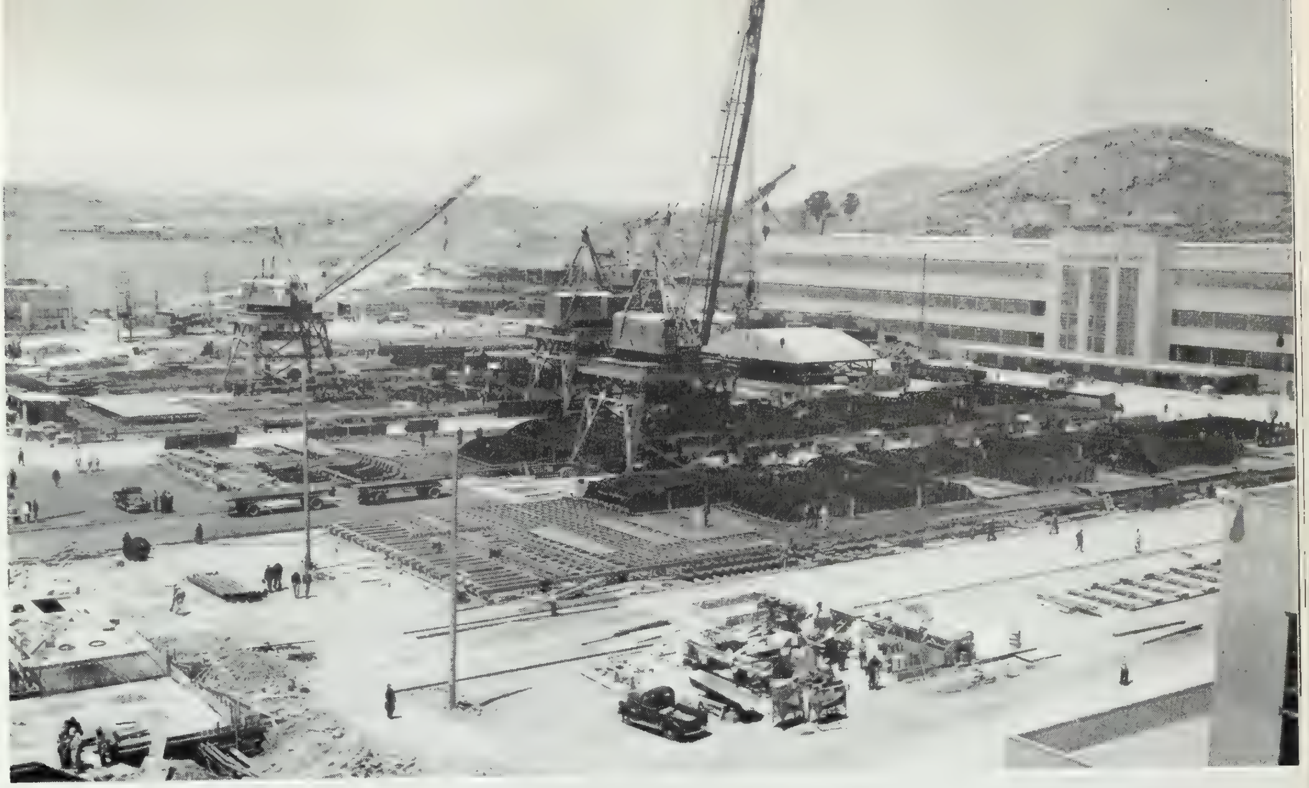
These modern pipe shops have mock-ups of all deck machinery and of all equipment or machines in the vessel to which the design indicates pipe or conduit connection.

Richmond Number Three has a very adequate and spacious machine shop equipped with overhead cranes of large capacity, and with a fine assortment of large machine tools. The forge shop has several steam hammers, and large hydraulic forge presses. The rigging loft is completely equipped to take care of any wire or Manila rope problem that may arise in connection with the yard operation and to prepare complete standing and cargo handling rigging for the C-4 type of steamer.

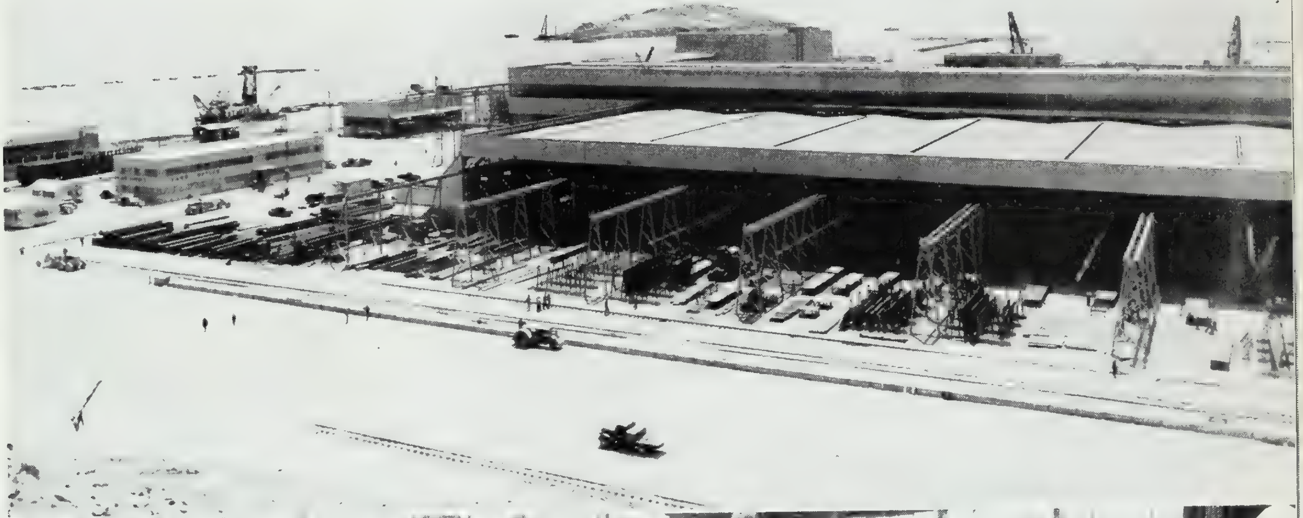
One of the striking features of this new yard is the warehouse—a huge seven-story modernistic building of reinforced concrete, with no windows and with slots for ventilation. Completely equipped with electrical illumination of the most modern type and mechanically ventilated, this building will have ample storage space to take care of the items of equipment for a number of C-4s.

All piping and wiring systems for this yard are carried in concrete troughs or tunnels below the ground level. Industrial railway trackage serves every shop, the plate storage and the ways. Large Whirley cranes serve the basins and the preassembly welding

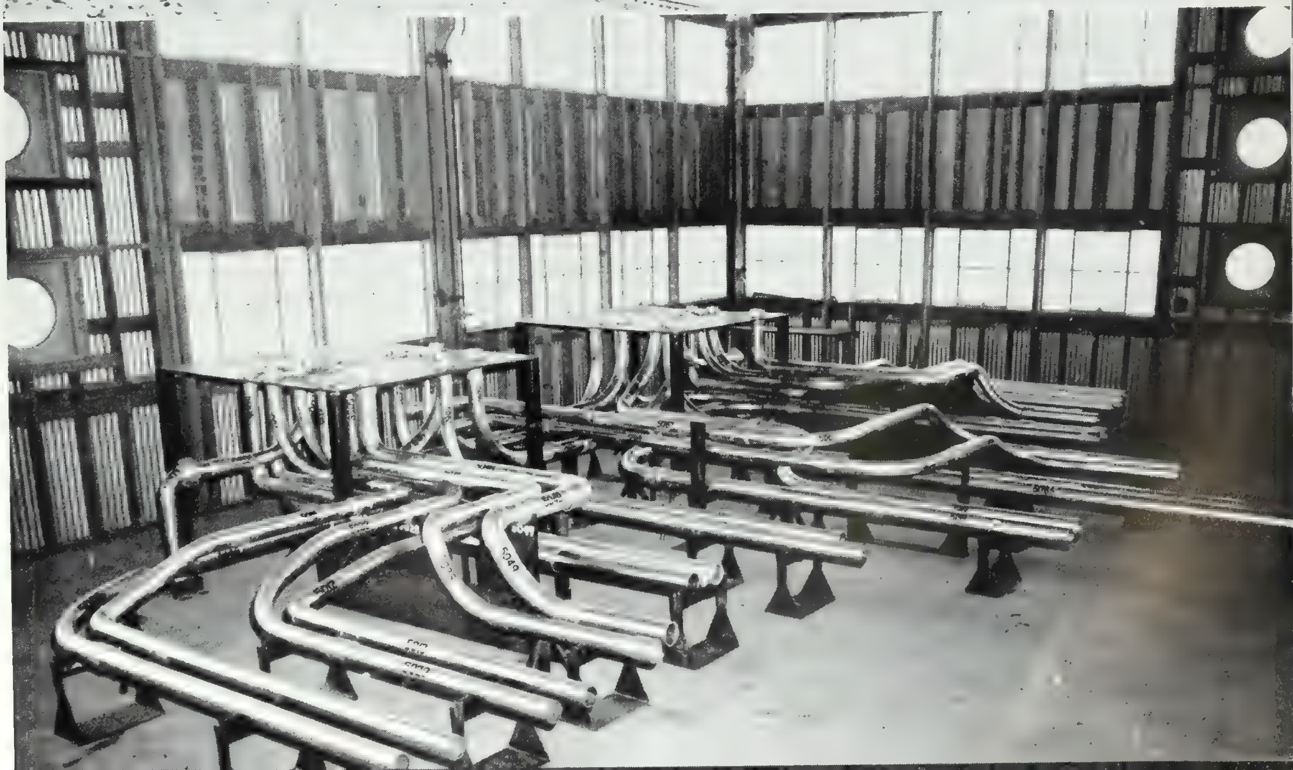
UPPER: Machine shop with warehouse in background.
LOWER: First aid building attractively streamlined.



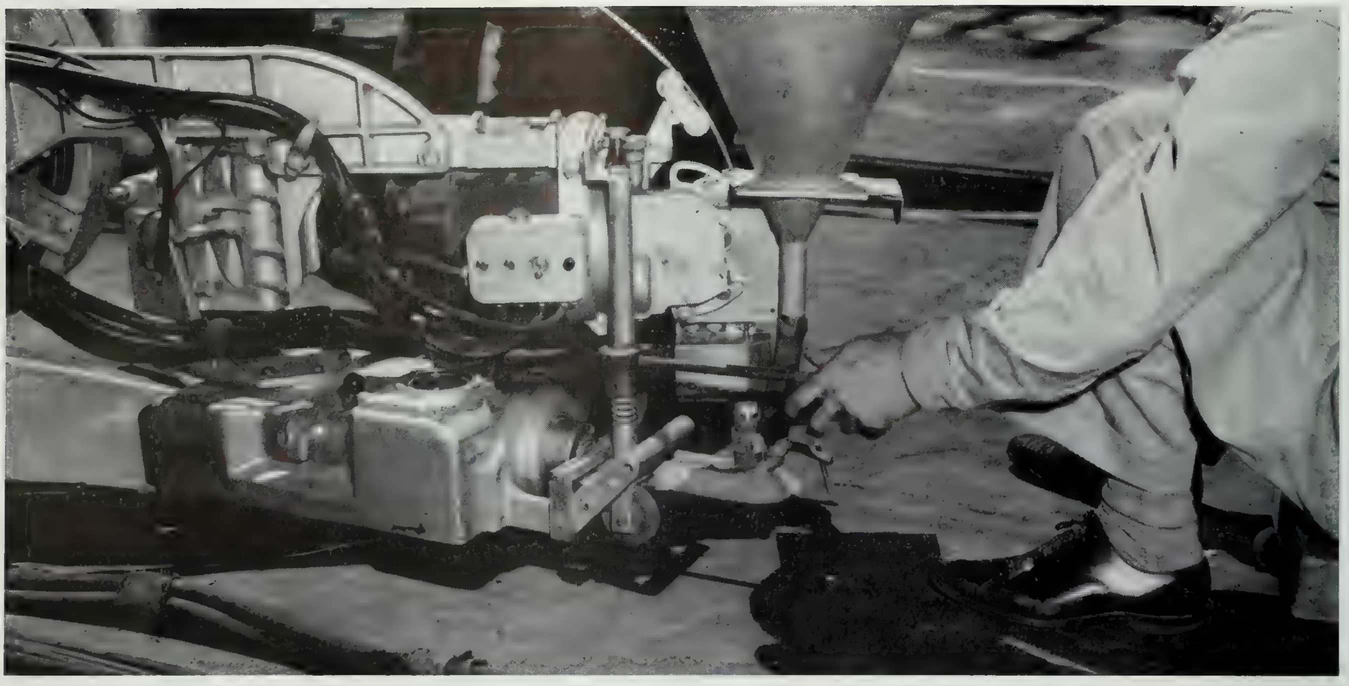
GENERAL VIEW of welding racks between building basins and plate shop.



PART of plate shop and plate storage yard.



INTERIOR of pipe shop, featuring mock-up of a couple of engine room piping systems.

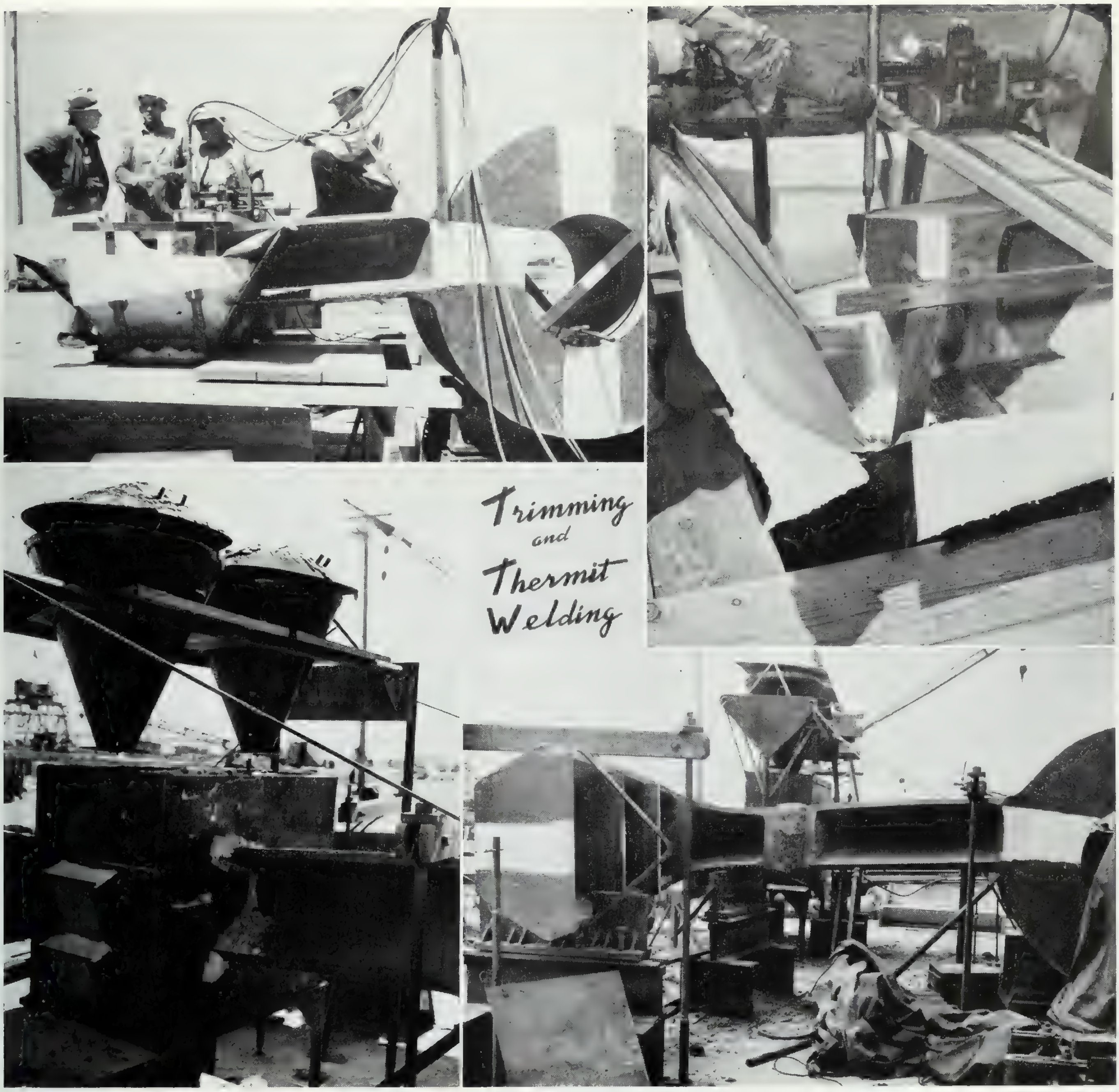


UNIONMELT SYSTEM AUTOMATIC WELDING MACHINE HELPS IN SPEED-UP OF SHIPBUILDING

TRIMMING plate with automatic burning torch.

FINISHED STERN FRAME ready to go into hull structure.

Trimming and Thermit Welding



TOP LEFT: Trimming stern frame and (top right) a close-up of the operation. BOTTOM: Two views of Thermit welding of stern frame casting. In the joining of large steel forgings, the process of Thermit welding is a great time-saver and produces joints stronger than the metal sections joined. Flame trimming is displacing many heavy machine operations in work of this type. The American shipbuilder is today on his mettle and must use the most speedy and effective methods in every operation to keep pace with the schedules set by the demands of war.

platens. Preassembly sections up to 80 tons can be readily handled. Locomotive cranes on caterpillar tracks and huge trucks and trailers are provided almost in profusion.

An interesting feature is the construction of the crane tracks between the basins. These are raised on a reinforced concrete structure, and in this structure are foremens' offices and tool rooms, so that men working on any hull can be served with tools right alongside the hull. As will be seen in one of the illustrations, a gallery is carried along each side for ready and protected access to these rooms.

Everything in Richmond Number Three is especially designed to promote speedy and efficient work, and built with the idea of permanence.

REAR ADMIRAL LAND receives Convention badge No. 1 from Arthur M. Tode.

16th Annual Convention . . .

PROPELLER CLUB OF THE U. S. A.

THE SIXTEENTH Annual Convention of the Propeller Club of the United States and the American Merchant Marine Conference met at the Waldorf Astoria, New York City, on October 15, 1942. President R. C. Lee, in his annual report thus epitomizes this meeting:

"In keeping with the times, this year's annual meeting has been 'streamlined.' Most of the entertainment features of conventions in previous years have been eliminated, but I am sure that this gathering is none the less enjoyable—even if only because it provides us all with an opportunity to greet old friends and make some new ones."

In respect to number of registered delegates and to enthusiastic attendance on panels of the conference, this 16th annual meeting made a high record transcending even the previous "high" attained at San Francisco in 1941. The banquet drew out over 2300 diners.

O. B. Whitager of the Sperry Gyroscope Company received many plaudits for his work as general chairman of the Convention Committees for the Propeller Club Port of New York. At the luncheon and at the banquet, he acted as toastmaster with poise and promptness, carrying the elaborate program through on schedule.

Chairmen of other committees included:

Reception Committee, Ralph E. Piper, Bethlehem Steel Company Shipbuilding Division;

Registration Committee, Edward J. Keane, Keane and Reid;

Transportation Committee, Everett F. Clark, Westinghouse Electric and Manufacturing Company;

Publicity Committee, D. H. Primrose, Marine Journal;

Finance Committee, John E. Slater, American Export Lines, Inc.;

Banquet Committee, John E. Thompson, J. E. Thompson Marine Supply Company.

Hotels Committee, Lewis L. Smith, Merritt-Chapman & Scott Corporation.

At the business meeting of Propellers, Arthur Tode and R. C. Lee were respectively re-elected honorary president and president of the Propeller Club of the United States. Mr. Joseph H. Godwin of Norfolk, Va., was re-elected as treasurer.

The following were unanimously elected by their respective regional delegations as National vice presidents:

New England Region: Ralph A. Leavitt, Portland, Me.

Middle Atlantic Region: Ira L. Ewers, Washington, D. C.

South Atlantic Region: Albert Van Dolan.

East Gulf Coast Region: Col. Harry C. Culbreath, Tampa, Fla.

West Gulf Coast Region: Munger T. Ball, Port Arthur, Texas.

Lower Inland Waterways Region: J. S. Bronson, Memphis, Tenn.

Upper Inland Waterways Region: Wm. H. Guernsey.

Lower Great Lakes Region: Ely C. Hutchinson.

Upper Great Lakes Region: Q. J. Hallburg, Chicago, Ill.

North Pacific Coast Region: Capt. Wallace Langley, Seattle, Wash.

South Pacific Coast Region: Fred A. Hooper, Los Angeles.

North European Region: George R. Alden, London, Eng.

Mediterranean Region: Charles Kalloch, Genoa, Italy.

West Indies Region: M. C. Mann, Porto Rico.

South American Region: David J. Pearsall, Barranquilla, Col., S. A.

Student Ports: Prof. Alfred Lomax, University of Oregon.

The Resolutions Committee presented nine recommendations which were unanimously adopted. Briefly, their content is:

(1) Urges greater use of inland waterway facilities to relieve strain on railroads and to effect economy of transport.

(2) Urges immediate construction of the New Jersey and the Ohio-Lake Erie canals.

TOP: Panel discussion on "State Maritime Academies" held in conjunction with the 16th Annual Convention of the Propeller Club of the United States. Left to Right: Vice Admiral Thomas T. Craven, USN (retired) superintendent, New York State Maritime Academy; Rear Admiral Douglas E. Dismukes, USN (Retired) superintendent, Maine Maritime Academy; Rear Admiral L. R. Leahy, USN (Retired) member of the Board, New York State Maritime Academy; (Standing) Captain Robert M. Henderson, USN, former Chairman of the Board, California Maritime Academy.

CENTER: Panel discussion on "Federal Legislation," with Chairman of Discussion, R. J. Baker, American Merchant Marine Institute, Inc., and Mr. William Radner, General Counsel, War Shipping Administration.

BOTTOM: Panel discussion on "Finance," with Chairman of Discussion L. D. Parmelee, Atlantic Gulf and West Indies Steamship Lines; and Mr. D. F. Houlihan, Assistant Administrator for Fiscal Affairs, War Shipping Administration.

(3) Recommends to Congress full recognition of the splendid part that American Flagship operating companies have taken in prosecution of the war.

(4) Urges War Shipping Administration to grant concessions as to steamship company advertising.

(5) Urges that service flags include stars for merchant seamen serving under wartime conditions.

(6) Urges that allocation of American vessels to our allies "be made in such manners as to insure their return (subject to casualties) to the service of our merchant marine."

(8) Recommends continuation by Federal Government of adequate navigation and flood control work under the United States Army Engineer Corps.

(9) Resolves appreciation and thanks to Port of New York, et al and sundry for gracious hospitality.

At the banquet, the guest of honor and principal speaker was Rear Admiral Emory S. Land Chairman of the U. S. Maritime Commission and of the War Shipping Administration. He addressed the Convention of Propellers as his "Board of Directors," brought them an encouraging report on shipbuilding and shipping,

J. LEWIS LUCKENBACH
President, American Bureau of Shipping; Chairman, American Merchant Marine Conference.

NATIONAL OFFICERS of The Propeller Club of the United States—reelected at the Sixteenth Annual Convention. Left to Right: MR. ARTHUR M. TODE, Honorary President, Propeller Club of the United States. Mr. Tode served as National President from 1931-1935 and in the latter year was elected Honorary President; CAPTAIN ROBERT C. LEE, USN (formerly executive vice president, Moore, McCormack Lines, Inc.). Captain Lee was elected National President at the San Francisco Convention held in 1941; LIEUTENANT HAROLD J. HARDING, USNR, who has served as National Secretary of The Propeller Club for the past eleven years; MR. JOSEPH H. GODWIN, who has served as National Treasurer for the past nine years.

and concluded his report with the following recommendations:

(1) Balance the all-out war program.

(2) Support our recruitment and manning drive.

(3) Support the United Seamen's Service.

(4) Support the American Merchant Marine Library Association.

(5) Support our safety, health and scrap drives.

(6) Support our unsung heroes who keep our ships sailing despite their heavy losses.

(7) Support the increased production efforts in our shipyards and our repair yards.

(8) Support the President and the high military and naval command in the tactics and strategy of the war.

(9) Do not support organizers, "needle boys" and back-stage intriguers.

(10) Be genuine Americans in man and deed.

Rear Admiral C. H. Woodward also spoke at the banquet, pinch-hitting for James V. Forrestal, Under Secretary of the Navy. He outlined the present tasks of the Navy, stressed the importance of naval shipbuilding, and gave high praise to the shipbuilders, the navy personnel, and the men of the merchant marine.

THE CHAIRMEN of the various New York Convention Committees are as follows: Seated, left to right: Lewis L. Smith, Chairman, Hotels; Julius C. Manzi, Vice Chairman, Banquet; John F. Gehan, Vice Pres., Propeller Club, Port of New York; Lt. Harold J. Harding, National Secretary, Propeller Club of the U. S.; Arthur M. Tode, Honorary President, Propeller Club of the U. S.; O. B. Whitaker, President, Propeller Club, Port of New York; John G. Thompson, Chairman, Banquet; Ralph R. Piper, Chairman, Reception; S. Willson Richards, Vice Chairman, Publicity; Everett F. Clark, Chairman, Transportation. Standing, left to right: Oscar F. Dupont, Chairman, Ladies Committee; Louis Weickum, Banquet; D. H. Primrose, Chairman, Publicity; W. Geo. Huntington, Vice Chairman, Golf; R. J. Baker, Chairman, panel discussion on Federal Legislation; John W. Neville, Vice Chairman, Registration; Edward J. Keane, Chairman, Registration.

At the opening of the Merchant Marine Conference, Rear Admiral Howard L. Vickery, Vice Chairman U. S. Maritime Commission, and deputy administrator War Shipping Administration, was for the third year acting as presiding officer. Basing his predictions on present performance, he promised substantially more than 24,000,000 dwt of merchant shipping delivered from American shipyards by the end of 1943. He referred to the conference as a clinic examining the American merchant marine "a too frequently sick child." However, this year we are at war. No one can tell how long that war will last. We cannot afford to let up on our shipbuilding pace until the war is safely won and the peace secured.

We are going to have a lot of ships on our hands when this war is over, with trained crews to man them, and "time-tested legislation to regulate them." The Liberty ships will then form the bulk of the American merchant marine. Probably one-fifth of the world's merchant shipping will be our Liberty ships. These ships will be very useful immediately after the war, but will hardly be competitive with modern tonnage. Should they be "sold foreign," or "sold to speculative operators," or maintained by the Government against future emergencies?

All wasteful practices in ship

MEETING OF THE NATIONAL BOARD OF GOVERNORS of the Propeller Club of the United States on October 16, 1942, at the Waldorf-Astoria, New York City, comprising the presidents of the various Propeller Club Ports.

Front row (left to right): Capt. E. Perham, USCG (Wash., D. C.), Capt. Wallace Langley (Seattle), Mr. George A. Zerr (Pittsburgh), Lieut. Harold J. Harding, USNR (National Secretary), Mr. A. W. Allison (Charleston). Middle row (left to right): Arthur M. Tode (Hon. Pres., Propeller Club, U. S.), Robert F. Rader (Sabine), George W. Jeffrey (Wilmington). Rear row (left to right: Mr. O. B. Cloudman (Mobile), Prof. Alfred A. Lomax (Univ. of Oregon), Mr. R. J. McGrath (Norfolk), Mr. L. C. Hinslea (Cleveland), Mr. Roscoe H. Prior (Boston), Mr. J. H. Godwin (National Treasurer),

MR. FRANK J. TAYLOR
American Merchant Marine Institute,
New York, N. Y.

operation must be eliminated. Cargo handling costs at ports must be cut to the minimum. Turn around must be speeded to the maximum. Marine insurance costs must be kept at home. Air transportation must be coordinated with sea and rail transportation as a partner and not a competitor. The American public must be sold the American merchant marine idea.

This speech set the keynote of the conference which divided itself into panels for discussion of various merchant marine problems.

The Publication and Press Panel under the chairmanship of Joseph E. Ridder, publisher of the New York Journal of Commerce, discussed the merchant marine and its public relations. A crystalized plan of action under forceful leadership was stressed as a prime necessity if the industry is to operate successfully under private ownership. Much discussion urged the advisability of the industry putting over a large well-developed plan of national publicity to sell the American merchant marine to the American public.

The Training Panel. Felix N. Cornell, of the Cornell Maritime Press, presided at a panel convened to discuss "Education for the Marine Worker." Two definite objectives "speed and efficiency" were held up as the aim of present training. Two methods are in use.

(1) Taking selected men outside the industry for short intensive courses in schools and then putting them on ships.

(2) Taking men in the industry into class work to improve his efficiency, either in schools ashore or during off-duty periods on board ship. The consensus of opinion seemed to favor the second method as producing better results.

The real meat of the program of these meetings, as it seems to us, is found in three papers.

"The American Merchant Marine at War," by Fraser A. Bailey.

"The Purposes of the American Marine Council," by J. E. Otterson.

"Air and Water Transportation in the Post-War Period," by Henry F. Grady.

On other pages of this issue will be found abstracts of these three papers.

There is one feature of this convention and conference which marks a new era in such merchant marine meetings. Not one speaker even referred to the one-time noteworthy and world-famous American clipper ship era.

J. H. GODWIN
National Treasurer, Propeller Club
of the United States.

The American MERCHANT MARINE AT WAR

by Frazer A. Bailey

**Vice President and Secretary of the Matson Navigation Co.
and President, Pacific American Steamship Association**

EMINENT AUTHORITIES have said that the Navy is our "first line of defense," and equally eminent authorities have added that any naval effort is dependent to a considerable degree upon available merchant ship auxiliaries. Mahan expressed it this way: "Sea power is a Navy plus bases plus a merchant marine." The British use the term "Merchant Navy" in speaking of their merchant marine, which keeps constantly before them the interlocking relationship and vital necessity of its merchant ships to the great British Navy.

We have only to look at the record in the present war to be convinced that what has been said of necessary merchant ship aid to the Navy is of equal force to the Army in any conflict beyond our own borders. This is particularly true where continuous, ample and timely deliveries of troops, munitions, war materials, food and supplies are of vital, or even critical, importance.

Too often, when the average citizen thinks of American ships, his mind revolves exclusively in the orbit of the carriage of cargo and passengers, and the interchange of trade between our own domestic ports, or with nearby neighbors. The conclusion creeps into his consciousness that this is merely another line of American business, and while it has commercial significance, its importance is no greater than other lines of commercial endeavor. Too often do we overlook the far-reaching national effect of a strong merchant fleet carrying our products to all parts of the world and returning with those commodities which are essential to our own economy. The trade opportunities and benefits thus opened extend into almost every village and hamlet of the land.

Important as are all the commercial aspects of a nation's merchant fleet, its importance in a military sense, is perhaps of even greater importance. Were we unable to maintain the right to trade overseas, and were we unable by military action, where necessary, to maintain the international position which is the heritage of a free people, any theoretical rights of foreign commerce would be only flights of the imagination. Therefore, when we think of Merchant Marine and its commercial activities, let us consider carefully its position as part of the foundation upon which the military forces of our country rely in an emergency. Such dual purpose should be constantly in the minds of our own government, and of our people.

Available Ships

Under the stimulus of the Merchant Marine Acts, there were available at the time of America's entry into the war 84 passenger or combination passenger and freight steamships which I am sure our military friends will agree were absolutely vital to our war effort, primarily as troop transports. To visualize, let me mention briefly the 35,000-ton America; the 33,000-ton President Coolidge; the 26,000-ton Lurline; and many others belonging to our leading American companies. They could not have been created by any emergency program, or mass production, to meet a situation which arose out of our sudden entry into the war.

Not days and weeks, but months extending beyond a year, would be required to produce ships of these types, and, of course, our shipbuilding facilities, if used for this purpose, would not be available for our heavy Navy and mass cargo ship programs. Not only is this so with respect to the passenger ships themselves, but their orderly design and construction, extending through a period of years in the pre-war period, has kept the American shipyards active, has created large forces of skilled shipbuilding mechanics, and has stimulated the maintenance of a substantial nucleus of shipbuilding facilities.

We must also not overlook the valuable commercial services which these ships have rendered in peace time, and the training which they have given to American masters, officers, and seamen, now so vitally needed. Therefore, I submit to you that any monetary aid from our Government to allow these ships economic parity in world trade, has been returned many-fold on the basis of financial considerations alone, and far beyond any financial considerations in the matter of national defense. I have talked about the combination passenger and freight ships merely to spot-light a situation concerning emergency production of ships of this class. The American cargo vessel in foreign trade has done equally valuable service in the commercial life of the nation and in sustaining our position in foreign commerce and maritime affairs in the pre-war period.

War Merchant Marine

Let us then see what was the condition of the American Merchant Marine at the time we were so infamously attacked. In addition to the 84 combination passenger and cargo steamships which I have mentioned, the ocean-going American merchant marine consisted of 355 tankers, and 667 cargo vessels, in excess of 2000 gross tons, or a total of 1106 vessels. That we were in possession of so large a number of cargo vessels is due, to a considerable degree, to the foresight and progressive action of the Maritime Commission.

We have seen our 84 combination freight and passenger ships immediately put into Government service!! Turning to our cargo-carriers, we find that all of these, first upon the basis of voluntary assignment and later upon the basis of requisition charter, were made available upon request of the United States Maritime Commission. Trades which were nonessential to the war effort, and trades in which it was possible to utilize other means of transportation, were discontinued. The vessels thereby released were diverted, at the direction of the Commission, to such other trades or war activities as the Commission instructed.

War Cargoes

It is public information that these American steamships have carried cargoes of essential war materials over trade routes unfamiliar to them in normal commerce, and of commodities with which they were inexperienced. These have moved forward from continental basing ports to our own forces and our Allies:

1. To the reaches of Russia, via Murmansk and Archangel.
2. To the deserts of Northern Africa and Egypt, via the Cape of Good Hope and the Red Sea.
3. To the Middle East, via the Persian Gulf.
4. To ports in the Indian Ocean.
5. To the "down under" regions of Australia and New Zealand and to the Islands of the South Pacific.

And of course, we have not failed to supply by this very vital transportation American outposts in Hawaii, Alaska, Puerto Rico, the Canal Zone, as well as Caribbean bases. It is a job of great proportions, of vital necessity, and of fascinating interest. We in the industry can truly be happy at the opportunity of rendering this service to our country. This, however, has not been without loss, or without casualty. Many of us have seen our fine ships disappear from the seas by enemy action. Many of us have had our personnel return to tell of the hardships endured. Almost always has this been with the **"chins up"** attitude and the **"carry on"** determination.

History will more completely reveal how, when this nation was attacked, every segment of American life rallied to our united defense and to the prosecution of the war. In the foremost rank was every phase of the maritime industry. Our Government called for every ship useful to the war effort. Every American shipowner responded without stint or reluctance. Every American Master, officer and seaman stood bravely and eagerly at his post. Every shoreside organization was straining at the bit. Whatever may have been our previous differences, when a crisis arose, that united effort was forthcoming which has made, and will continue to make, us one of the greatest of all nations. This is true upon the high seas no less than it is in business ashore, in the homes and firesides of the American people.

With importance second only to the delivery of war materials, these vessels have brought back to us on their return voyages commodities of foreign origin vitally needed in our war effort. Among these are:

1. Wool for uniforms and other purposes.
2. Chrome, manganese and other ores for steel making.
3. Bauxite for aluminum for our airplane industry.
4. Nickel, copper, lead, and even pig iron.
5. Nitrates, tin, sugar, copra and many other important commodities.

While all of this was being done, we have not failed to carry essential civilian supplies to American overseas areas in Hawaii, Puerto Rico, Alaska and the Canal Zone, and we have brought back the products of those communities. We have maintained the necessities and essentials of life for American citizens living in offshore areas, and we have carried on the essential trade to and from all Western Hemisphere nations under our President's "good neighbor" policy.

Long Voyages

High military authorities have said that were it deliberately planned, it would be almost impossible to locate the war areas where the overseas shipping routes would be longer. Many of our American ships, carrying war supplies and lend-lease cargoes to those areas, sail on voyages from 10,000 to 13,000 miles and on a round-trip voyage travel a distance equal to circumnavigation of the globe. This condition has greatly increased the burden upon the supply lines of our war effort and has made even more vital the transport of personnel and commodities by the American ships.

This, then is the American merchant marine at war, at least as far as it may be told under war conditions. History will tell you more, and I have a strong conviction will increase the pride we all feel in being a part of an industry which serves our country in the carriage of its commerce in days of peace, and renders vital aid in the turbulent days of war.

(An abstract from an address delivered before the Propeller Clubs of the United States, American Merchant Marine Conference, 16th Annual Convention.)

Air and Water Transportation

IN THE POST-WAR PERIOD

by Henry F. Grady

BECAUSE OUR problem of post-war integration of air and water transportation involves the whole field of national and international policy—political, economic and military—it might be well to review the extent to which air transport lines were already established as the world moved into the present global conflict.

Many of the services which I shall mention are known to me personally. During the two missions which I headed for our Government during the past year, one to the Far East to conduct an economic survey of strategic war materials, and the other to India as head of President Roosevelt's Advisory Mission to that great country, I traveled a total of probably 70,000 miles, nearly all of it by air. So I have considerable first-hand information about air transport service, as relates to our own and other countries, and, I believe, to its place in post-war reconstruction.

A recent publication of the Council on Foreign Relations, "International Air Transport and National Policy," gives a detailed outline of the amazing world-wide net-work of air lines that had been developed prior to the present war.

It is significant to note here that nearly all of the trans-oceanic services, including those originating in the Americas, paralleled established maritime trade routes and were in some instances affiliated in one way or another with the steamship lines whose sea lanes they paralleled. This was a perfectly logical development for the reason that air and water transportation are naturally and essentially complementary. Each mode has its own province and special function, but it is my firm conviction that the highest public service is attained where under proper circumstances the two are combined, each working in conjunction with and complementing the other.

There are certain obvious reasons why this should be so:

1. **Steamship companies for the most part are well established in their respective trades.** The business and good-will of these companies have been built up over a period of many years. Their connections are of tremendous value not only in maintaining such trading relations as having existed over the years, but in extending and expanding the commerce that would naturally accrue from any new or improved transport facilities. What is more natural then, or more in the public interest, than to have an air transport system with its specialized limited service working in close coordination with a deep-rooted, well-established steamship company?

2. **Affiliation with a paralleling steamship line adds measurably to the safety factor of flying.** The planned availability of steamers at regular intervals along the course not only may provide succor in case of mechanical difficulties and forced landings, but would be available also to report on weather conditions along the route ahead. The experience of companies operating airships in the past has been that frequent weather observations are necessary not only to make flying more safe but more economical as well through the discovery, by means of theodolite observations, of favorable or unfavorable air currents. Major ocean lines as a rule have many ships spaced along the course of their trade routes, and airships receiving day and night observations from such surface craft are better prepared to cope with weather conditions.

3. **Lower cost operations** for air transport services, which means of course lower cost transportation to the public, would be possible as a result of affiliation with paralleling steamship companies. The old-line, well-established steamship company already provides, through its network of foreign and domestic agencies, the selling organization for the promotion of business, and the facilities for supply, administration and management.

4. **Combined operations would give the auxiliary air arm the advantage of experienced and proven management counsel in a foreign trade field where air transport is new.** Not only would this be true in the matter of more efficient operation, but also in the development of special trade and travel situations, based on long years of experience and "know how."

5. **Combination service of air and water transport would be in the interest of national defense.** Argument is no longer admitted on the score that the merchant marine is a vital adjunct of the

Navy, and that commercial aviation in a national emergency is an equally vital part of military aviation. As an army man once put it: "The civilian air force is to our military air force what our merchant marine is to our Navy; only more so, because it can combine fighting activities with cargo and transport activities!" There is ample proof likewise that sea power and air power are greatest and most effective when they are combined. If this be true in a military sense, why should it not be true in a commercial sense? Warfare may be economic, or commercial, as well as military. Anything that contributes to peacetime operating efficiency of air and water commercial enterprises, each of which is a military auxiliary in its own right, should be a net overall contribution to national defense. For this reason, if no other, air and water transport systems paralleling each other in world trade lanes, should be combined where feasible and warranted.

Flying Boxcars

As regards the carriage of cargo by air transport, we hear a great deal these days about "flying boxcars" and how all our transportation systems will be outmoded by new developments in aeronautical engineering. Let me suggest to you that none of us can see very far into the future. There are many inherent problems of considerable magnitude to be solved before air transport can compete for general and bulk commodities with the cheaper surface systems —land and sea.

What does concern me, however, and concerns me very vitally, is whether or not American steamship companies, who in some instances helped to pioneer air lines over their respective routes, are going to be allowed to meet their foreign competitors on an equal footing, and in the public interest improve and advance their present services by using air transport in coordination with their present operations.

It is entirely possible that first-class mail (and perhaps all mail matter), express packages containing commodities of great value, and such precious cargoes whose worth compared with weight could justify higher tariff for quicker transit will be freighted by air transports. On the other hand, the great bulk of our foreign commerce will continue to be comprised of goods of relatively lower value on which the longer transit would not justify a heavy increase in tariff. Such cargoes and many passengers, as usual, will continue to fill the holds and staterooms of ocean-going vessels.

All of which brings us to a realization that the two types of service, sea and air transport, while operating between the same points and serving in general the same communities and the same commerce, are susceptible of integration into a highly efficient and economical transportation system. Under such conditions, they obviously could be made complementary rather than competitive.

If given circumstances—either as to person or commodity—require one type, or can be most advantageously performed by one type, there would seem to be little place for salesmanship, urging or influence. The traveler or shipper would select the mode which is best suited to his convenience and economy, and eventually the two services would settle to a common sphere of complementation, and as a result of which would develop a far greater volume of American commerce and public service than if they went their separate, competitive, and individually more costly ways.

This situation is well recognized by many foreign governments and foreign transportation interests. A number of foreign steamship lines, as I pointed out before, own and operate either independently or as auxiliary services, air transport lines serving the same communities.

Prior to the outbreak of World War II, the French had their air and water combination known as Aeromaritime, which was an intercolonial service in West Africa. It combined the shipping company, Chargeurs Reunis, with an auxiliary air transport service.

In 1937, the French organized a company known as Air France Transatlantique, in which one of the principal stockholders was the steamship company Cie. Generale Transatlantique.

In the establishment and operation of the projected Dutch Trans-Atlantic air line, which was denied fruition by the outbreak of war, a syndicate was formed in which the Holland-America line, steamship operators, held a large block of stock and planned a leading role in management.

As for Great Britain, it has been announced publicly that Cunard and White Star would interest themselves in acquiring air transport auxiliary services as soon as the war terminates, and several other important British steamship lines are already operating in connection with air transport services.

Canadian air transport is being increasingly concentrated in the hands of the powerful Canadian Pacific Railway, which has acquired controlling or substantial interest in most of the private air transport companies, including Canadian Airways, Ltd., Yukon-Southern Air Transport, Ltd. Just prior to the outbreak of war, I understand this same company, which has extensive transpacific steamship operations, was already far along with plans to inaugurate an auxiliary air transport service between Vancouver, B. C. and the Antipodes, over which route they own a joint interest in the British subsidized steamship line in partnership with the Union Steamship Company of New Zealand.

Thus we see that a closer relationship between steamship and air transport facilities serving the same communities is already fully recognized abroad, and is actually in operation in many instances. This gives us a rough idea, or a "preview" as it were of the sort of competition American transport, both air and water, may expect to face in the post-war period. The

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'YOU BET I'M GOING BACK TO SEA!"
Register at your nearest U.S. Employment Service Office
U.S. MERCHANT MARINE
War Shipping Administration
MAN THE VICTORY FLEET

Shipbuilder And

A CLEARING HOUSE FOR IDEAS ON THE WAR-WINNING JOB OF WHOLESALE PRODUCTION OF SKILL IN THE MARITIME CRAFTS

PRINCIPLES OF ORGANIZATION

by Lt. Comdr. Stewart F. Bryant

U.S.N. Ret. Instructor in Problems of Shipbuilding Supervision for the Engineering, Science and Management War Training Program, U. S. Office of Education

In MAXIMIZING the power of our war industries there are three main efforts: organization, training and leadership. Of these, organization is probably the primary force, as training must flow from organization, and leadership cannot be made effective without it. The greater principles of organization are found as more or less common in all large industries.

Victory in this world conflict will be assisted by regarding the coordination of Army, air services, Navy, and merchant marine as a single unified exertion of military power. Principles of administration and control are then a matter of common interest.

It may be of value, therefore, to roughly sketch some of the fundamental principles of fleet administration, gathered as a former secretary to the Commander-in-Chief, U.S. Battle Fleet. Ideas expressed must not be construed as official or as representing the views of the Navy Department.

OFFICERS:

A. **Commander-in-Chief**: a leader who holds a combination of supreme authority and responsibility over the fleet. He acts as the intermediary between the fleet and superior authority and prescribes policies in support of that authority. He does not concern himself with administration of details and restricts his work to those vitally important matters which justify and merit the use of his time.

B. **Chief of Staff, or Staff Executive**: carries out the policies of the Commander in Chief, sees that the administration of the fleet supports these policies, and sees that there is constantly in effect a sound and flexible plan of organization. Organization must be such that any person in need of a decision knows where to go for the quickest results.

"A Chief of a Staff or of a section shall work through his Staff, and not over their heads; he must treat them as responsible advisers for their particular sections, and not merely as routine clerks to collect information and carry out orders.

"Heads of sections shall work for the good of the whole unit and not merely for their own section. They are responsible for a link in the chain and, as the strength of the chain is that of its weakest link, it is their duty, not only to be sure that their link will stand the strain, but to back up any that are less able to bear it. They must be colleagues and not rivals."

Responsibilities are assigned in such a manner that practically every item of fleet work has a designated cognizant officer, that there will be no material duplicate responsibility and that there will be no deficiencies or gaps in coverages of fleet work. One single officer must always be held responsible for timely action.

C. **Secretary or Office Manager**: responsible for records, for follow-up for timely action, for distribution of communications, for recommendation from those concerned to action officer, and for distribution of information to those staff officers affected by action taken.

Principles of Administration

1. A clear pyramidal flow of responsibility and authority from the leader, or commander-in-chief down to the "petty officers." Re-

Seaman Training

sponsibility and authority should never be separated. Efficient control comes by delegation of both throughout the fleet, with reasonable risk, to further the development of leadership.

2. No person, except in unavoidable emergency, should ever be assigned to a task for which he is not properly trained.

3. No person should be allowed to become indispensable. A Chief of Staff once remarked that that was the time to fire him.

4. For every key position, a relief should be in training and ready to take over.

5. All staff officers, or heads of departments, must be schooled to repress friction and partiality of any sort, as these tend to become contagious throughout the organization.

6. There must be thorough and everlasting loyalty to the commander-in-chief. Constructive recommendation for the removal of error and for improvement should always be welcome, which must be made of both courage and courtesy, and submitted through the Chief of Staff or "official channels."

7. Loyalty "down" is equally important. It includes not only promotion and reward based upon merit, impartial and just penalties for misconduct, but as well a constant effort to better conditions of health, safety, nutrition and training. Training is the greatest lifesaver in the fleet.

8. A uniform system of rewards and penalties, as far as possible, keeps down needless grievances. A scientific method of handling personnel constantly tends towards more use of incentive by reward and recognition, and less use of fear and punishment. Never take disciplinary action until an officer or man has had a chance to state his case.

9. Watchful and routine inspection safeguards and holds up materiel.

10. Far-sighted planning and the development of instinct in preventing casualty and trouble, ties hand in hand with the placement of well-trained and fully qualified men in key positions. Remedies before and not after casualties.

11. Report systems for indispensable records are needed. Also a method for the timely removal of reports the moment they are needless. "Too few reports are costly. Too many are more costly."

12. Direction and detail can well be minimized from the top down. Fewer rules and regulations often create greater use and development of intelligence, and make mobilization and indoctrination of new forces easier and faster.

13. A spirit of sacrificial cooperation is best expressed by an old destroyer squadron doctrine: "When two officers, or two groups, or two ships, have a cooperative job to see through, each should go 60 per cent of the way." What good are bridge beams without overlapping butt straps? Leave room for the rivets to hold their share of the span of the job.

14. Do not change policies or procedures until it is certain that a better substitute is found.

15. But flexibility and adaptation for new problems and conditions are paramount in a perilously dynamic and swiftly changing military world.

16. A constant and merciless search for error or mistake and for inefficient methods must be the order of the day, with immediate and adequate commendation for noted improvement.

17. In meeting new problems, precedents must be searched out from all available sources. All available talent should be used if possible before final action is taken. This with the use of military imagination and positive decision saves lives and ships.

18. For every action and decision a single officer should be held responsible. Divided responsibility has no place in war time.

19. Never short-cut subordinates if it can possibly be avoided. It weakens confidence and control.

20. Never stop looking ahead, and looking outward over every other point of the compass. Be ahead of the time factor in antici-

pating future needs and future risks.

Summation

This is a war of brains as well as one made of morale and material. The ideas of value from every one or any one must have their uses maximized. This breeds greater participation, greater recognition, and greater morale. Leaders with open minds, sensitive to new ideas and new real values, have the greatest part of all to play.

FOUNDATION OF THE SHIP

V—Some Hull Details

THE WORD HULL as applied to ship structure includes the uppermost complete deck and all of the structure below that deck. Everything above that deck is included in the general term superstructure (something built on and above the hull). The exception to this rule is the form of vessel having a raised deck at the forward end and/or the after end, which raised deck extends the full width of the ship and so becomes in effect a raised extension of the upper or weather deck, making it complete. In this case, the raised forward and/or after ends become a part of the hull.

This hull must be so designed that when built it will:

(1) Always have sufficient surplus buoyancy to stay afloat under any sea conditions;

(2) Be strong enough so that when it is fully loaded, it may be supported at each end without sagging, or supported at its middle without hogging:

(3) Always be in stable equilibrium when afloat in water: and

(4) Be watertight enough to keep the sea water out of its interior compartments.

These are the indispensable conditions for a safe hull in any vessel regardless of whether she be driven by oars, sail, steam, or diesel, or whether she be built of wood, steel, concrete, or any other material.

In the next few installments of this article, we shall endeavor to make plain the ways in which these four conditions are secured by the designers and builders of ships.

Buoyancy

Buoyancy is the upward thrust due to displacement. You will remember in our first installment when we rolled out the cubic foot steel and made it buoyant by increasing its displacement, we found that each cubic foot of sea water displaced gave a buoyancy of 64 pounds, and it followed then that 35 cubic feet of displacement gave a buoyancy of one long or nautical ton (2240 pounds).

This is the "Foundation of the Ship," the basic fact underlying all buoyancy calculations and all ship design.

When a ship operator requires new ships, whether that operator be a commercial firm requiring, say, three to six new cargo vessels, or the United States Maritime Commission requiring 2000 vessels for war purposes, the first questions to be settled are:

(1) What is the best size vessel for the particular route or purpose?

(2) What is the maximum draft for the harbors involved?

(3) What is the best speed for practical operation?

There are, of course, many detail questions in addition to these three, but these have to be decided first before the details are approached.

By the cargo ship operator, the term size is, as usually, expressed in cargo capacity. He will want a vessel that will have a deadweight cargo carrying capacity of say 9000 tons, and a bale or cubic capacity of say 500,000 cubic feet.

In order to get a very approximate idea of the total displacement of a steamer that would carry 9000 tons of cargo, the naval architect would look up the characteristics of vessels with similar cargo capacity and various speeds. He finds that several steamers having cargo capacity of 9000 tons have a total loaded displacement of from 13,800 to 14,200 tons, so he assumes 14,000 for a loaded displacement tonnage.

That means that he must provide a hull which, when down in the water to her allowable load line, will have displaced:

14,000 × 35 = 490,000 cubic feet of sea water.

The shipowner will always have a draft limit and usually will have a figure for total beam that appeals to him as being best suited to his particular needs. Let us assume then that the loaded draft has been set at 25 feet and the beam at 62 feet and that the owner wants a moderate speed cargo ship capable of maintaining schedules at 12 knots speed.

Now, it is very easy to figure the dimensions of a rectangular box whose volume is known, but it is far from easy to figure the dimensions of a box or case whose outlines are a set of complicated curves like those which form the underwater portion of a ship's hull. In order to take care of this situation, naval architects use what they call the block coefficient or coefficient of fineness. This coefficient approximates the ratio between the actual volume of the ship's underwater body and the volume of a rectangular box of the same overall dimensions. Approximate block coefficients of a few types of ships are:

Barges	0.85—0.90
Cargo ships up to 12 knot	0.76—0.82
Cargo ships over 12 knot	0.70—0.76
Cargo-passenger....	0.65—0.70

Let us assume a block coefficient for our ship of 0.75. The equivalent box to give our hull, 490,000 cubic feet of displacement volume, would be 490,000 ÷ 0.75 = 653,000 cubic feet. Since this volume always equals length (1) times beam (b) times draft (d), we have 653,000 = L × (b) 65 × d (28), which very simply transposes into length $= \frac{653,000}{62 \times 25} = 421$ feet plus, or say 422 feet.

So, now we have arrived very simply at the approximate principal characteristics of our ship's design.

Lgth. bet. perpendiculars..	422 ft
Beam	62 feet
Draft	25 feet
Volume of underwater body	490,000 cubic feet
Displacement	14,000 tons
Speed	12 knots

Naval architects have several practical formulae by which using the above figures and certain coefficients they can ascertain approximately the horsepower necessary to drive the hull at a certain speed.

One of these is:

$$H = \frac{V^3 \times \sqrt[3]{D^2}}{K}$$

H = Indicated horsepower of engine
D = Displacement in tons
V = Speed in knots
K = A coefficient ranging from 250 to 300 for merchant vessels of moderate size and good modern lines.

Let us assume that in the case of our vessel, K = 275, then

$$H = \frac{12 \times 12 \times 12 \times \sqrt[3]{14,000 \times 14,000}}{275}$$

$$= \frac{1728 \times 585}{275}$$

$$= 3675 \text{ HP.}$$

From what we know about very modern vessels, this horsepower seems high for the displacement and speed, so let us try another rough-and-ready formula which is based on slightly different factors, i.e.:

$$H = \frac{K \times S \times V^3}{100,000}$$

Where H = Indicated H.P.
V = Speed in knots
S = Wetted surface in square feet

K is a coefficient which equals: 6 for beamy ships; 5 for commercial form; 4 for fine ships.

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Steamship Operation and Sea Scouting

by Leonard S. Mosias

Chairman San Francisco Scout Alumni

THE BOY SCOUTS of America is an organization really keyed to the tempo of our time. As a matter of fact, ever since it started — over 30 years ago, Scouting, with its program of preparedness as exemplified by its motto "Be Prepared," has been training our youth to act quickly and sensibly in emergencies. Performing deeds of heroism beyond the line of duty is an ordinary task to the well-trained Scout. The records recount countless numbers of times when Scouts have braved fire, floods, hurricanes and other perils without any thought but for the safety of others. As a part of the Boy Scout movement, the Sea Scouts are outstanding as a training ground for all boys from 15 to 21 years of age.

The training that the Sea Scouts receive prepares them particularly for the type of service for which the Navy is now in the process of procuring officers. Officials high in Navy circles have many times expressed the high esteem in which the Sea Scouts are held by the officers and men of the service. The Sea Scouts in the Navy have earned that reputation through their training in two of the most essential qualifications of a good sailor — character and seamanship.

During the 15 years that the Sea Scouts have been organized, the record of Sea Scouting in San Francisco has been outstanding. It ranks with the top-notch Councils of the country. Much of the success is attributable to the volunteer leadership and cooperation of men and organizations who are interested in training young men to become our future merchant marine and Navy officers.

The Commodore of all the Sea Scout ships in the San Francisco Area Council is Charles L. Wheeler, vice president and general manager of the McCormick Steamship Company. A great deal of the success and the recruiting of volunteer leadership and sponsorship from shipping interests is due to the inspirational leadership of Mr. Wheeler. Working side by side with Mr. Wheeler, as Fleet Commissioner, is A. J. Owens, of the Sudden-Christenson Steamship Company. Mr. Owens' untiring efforts have been one of the chief reasons for completion of the new Sea Scout Base at Aquatic Park. Closely associated with Sea Scouting and following all its activities during the past several months has been Bob Fouke, one of our leading admiralty lawyers and a hard-working member of the Propeller Club. Taking part in planning the Sea Scout program, John P. Williams, of the Pacific American Steamship Company, has always been ready to lend a helping hand.

Synonymous with shipping interests is Ralph Myers, who, through his connection with the Steamship Owners Association, has contributed much towards a better job of Sea Scout training. Mention must be made of Ed Schneider and his Marine Committee of the Junior Chamber of Commerce. Their continued interest has gone a long way in contributing toward the success of Sea Scouting in San Francisco. Actively sponsoring Sea Scout ships now, are the Pacific American Steamship Association, Ship Owners Association of the Pacific coast, and the Propeller Club.

At the present time the Council has 14 Sea Scout ships. Their floating equipment is berthed at the Sea Scout Base in Aquatic Park, and consists of motor launches, sailboats and whale boats. The Sea Scout Base, easily accessible, being located at the foot of Van Ness Avenue, was made possible through materials, labor and financial aid from practically all shipping and allied interests in San Francisco.

Tug

FORMER MOHAWK TO SEAGOING

A RECENT AND noteworthy Pacific Coast conversion was the transformation of the former passenger and cargo steamer Mohawk into a powerful ocean-going diesel tug renamed Paula. This hull, 97 feet long, 149 tons net, was built in 1921 and operated in the waters of the Puget Sound and Columbia River. The marine strike of 1934 laid her up until 1939, when she was again placed in service as a general cargo boat making twice-a-week trips between Portland and The Dalles, Oregon. She was acquired in 1941 by Captain A. Leppaluoto of the Upper Columbia River Towing Company and turned over to L. H. Coolidge, Seattle naval architect, who was commissioned to draw plans for the conversion job. His instructions were to "design and equip Paula especially for ocean towing, with economy of operation as the key note."

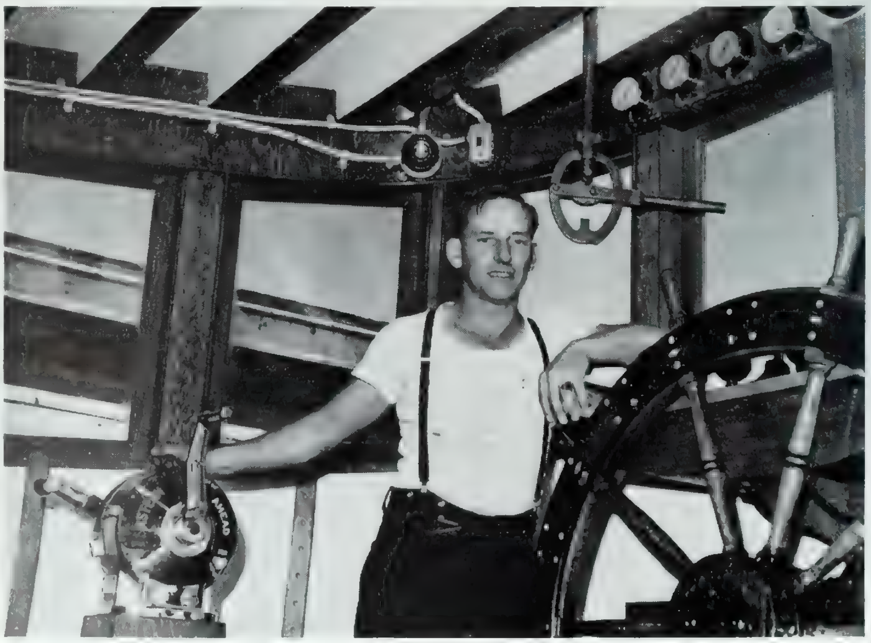
The name Paula was dedicated to the five-year old daughter of Captain Sam Geer, the boat's master who has a noteworthy reputation in the Pacific Northwest.

Rebuilding operations took place at the Klepp Marine Ways, Rainier, Oregon. The entire two-story superstructure was cut down to the main deck, the hull strengthened and bulkheaded for the placing of powerful propulsion and auxiliary units, and a modern towboat deck house was erected.

Paula is powered by an eight-cylinder DMG 38 Enterprise supercharged diesel engine, 12-inch bore by 15-inch stroke, rated at 1325 horsepower.

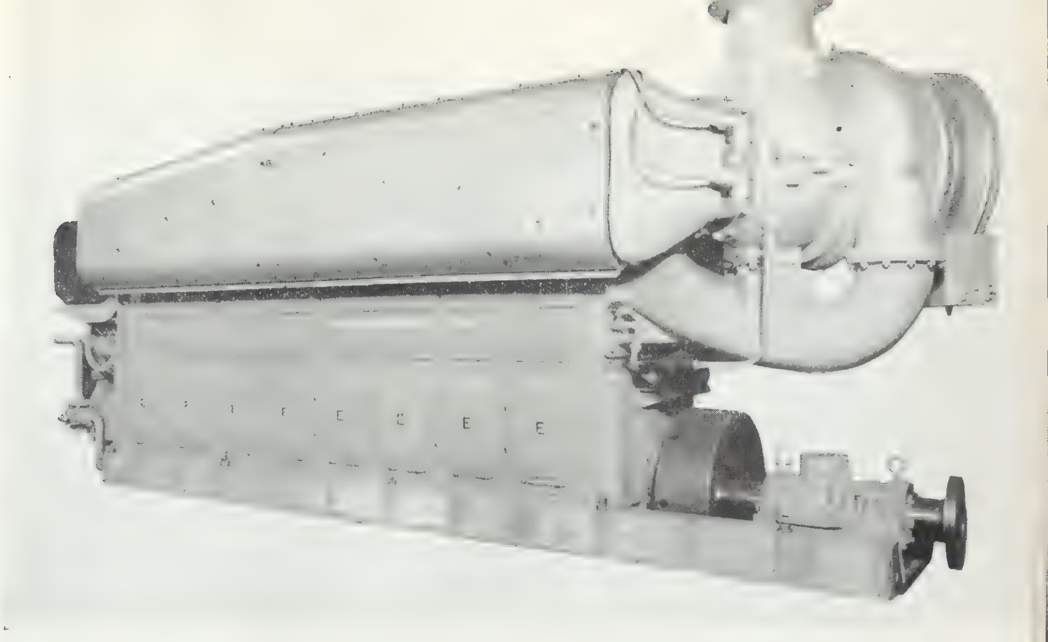
Auxiliary equipment includes two diesel-powered generators, one of 15 kw, the other of 25 kw capacity, which are used for lighting and auxiliary power. Electric steering equipment was designed and installed by Marine Electric Company of Portland. An interesting phase of Paula's operating apparatus is that the electric towing engine and electric anchor

PILOT HOUSE OF THE PAULA



Paula

STEAMER CONVERTED DIESEL TUG



THE ENGINE OF THE PAULA as shown above is an 8 cylinder Enterprise diesel with built-in Elliott-Buchi exhaust gas turbine supercharger.

winch were entirely designed, developed and built by Captain Geer and his own crew. Other equipment includes: a Photo-Electric Pilot; Fisher direction finder; Northern Radiophone; large Cunningham disk type horn; a 19-inch carbon arc spotlight; and an Enterprise remote control for the main engine.

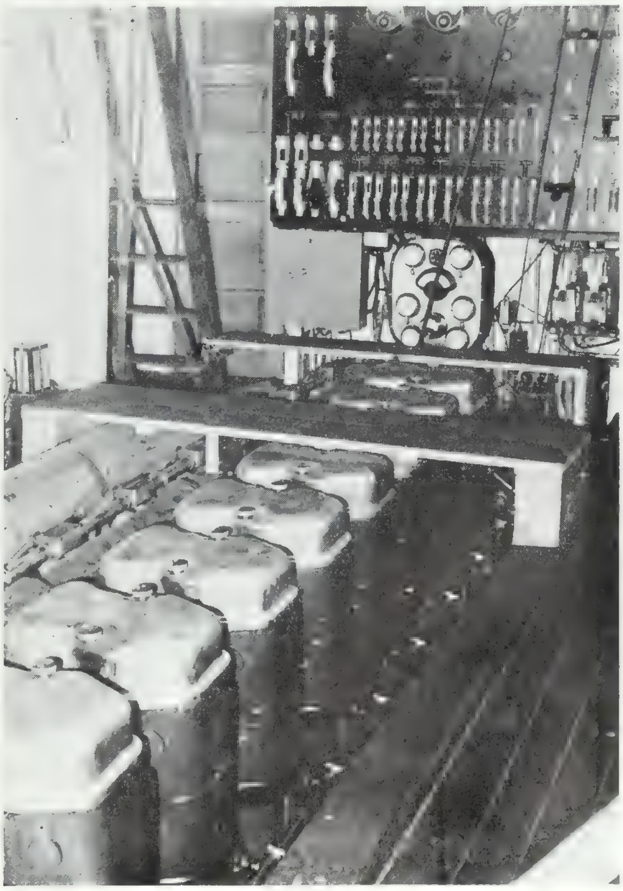
Paula's pilot house is most modernly equipped with dual controls and other apparatus. On the same deck is the master's stateroom with two beds. The forward portion of the main deck is divided into two staterooms, with berths for two men each. Directly adjoining these staterooms is a specially designed galley, with a modern electric refrigerator and an oil-burning range. Many built-in fixtures provide for compact service including a table seating six persons at a time.

The engine room is located amidship, providing a large, free-working deck, with the towing equipment aft. Fuel is contained in four tanks, with a capacity of 18,000 gallons. Fresh water tanks hold 5000 gallons.

Additional features include an electrically-heated hot water tank, with two shower rooms served by a Gardiner - Denver electrically - driven air compressor, and Crane sanitary equipment and fresh water pumps.

A special feature of the Paula is that she carries full equipment to make repairs while away from her base, including an electric Lincoln arc welding set with 150-foot leads, which will permit welding work on steel barges.

The past performance of Enterprise supercharged diesel engines with the Upper Columbia Towing Company fleet determined the choice of engine for Paula. The main object of the conversion was to produce a powerful and economical ocean-going towboat to tow steel barges between The The Dalles, Columbia River ports, and California ports; hauling deckloads of lumber South, and petroleum products North.



UPPER PLATFORM of Paula's engine room featuring cylinder tops and switchboard

THE U. S. COAST GUARD

A BRIEF REVIEW OF ITS RECENT EXPANSION AND ITS NEW SERVICE ACTIVITIES

THE WORK OF THE United States Coast Guard during the past year has been characterized by unprecedented activity and expansion based on the cumulative needs of the nation's war effort. The service is now operating under the direction of the Secretary of the Navy, in accordance with law and an Executive order dated November 1, 1941. By provision of the Executive order and in accordance with plans made in 1940, the entire Coast Guard as a functioning unit has been bodily placed under the jurisdiction of the Secretary of the Navy, with the Commandant of the Coast Guard continuing to administer the service under the Chief of Naval Operations.

The more outstanding of the year's activities may be summarized as follows: an increase in the number of authorized enlisted men and officers in the service; the development of a 90-day training course for reserve officers at the Coast Guard Academy; enlargement of the corps of regular cadets at the academy; increased responsibilities of the captains of the ports, especially in the port security work; the commissioning of many new recruit training stations; the consolidation of the activities of the former Bureau of Marine Inspection and Navigation with the Coast Guard; a substantial increase in the Coast Guard fleet as a result of the greatest shipbuilding program in service history, and the acquisition of many small but serviceable craft from private owners.

Port Security

One of the more important of the Coast Guard's numerous wartime activities is the functioning of the captain of the port organizations, which, in addition to their normal peace-time duties, have been further charged with the responsibility of safeguarding all vessels, ports, harbors, and waterfront facilities in the nation. This new work is of paramount importance because these ports are the bottlenecks that must be kept open to insure a steady flow of fighting men and equipment to the far-flung battlefields of the world.

To secure the utmost efficiency in the guarding of the nation's seaports, the captain of the port organizations have been greatly enlarged. Thousands of enlisted men and proportionate numbers of officers were needed to man the hundreds of small boats which now maintain a constant patrol in principal harbors. Enlisted men in great numbers were also needed to serve as guard details for important waterfront installations.

For the coordination of all port security organizations throughout the country, the Coast Guard has assigned two rear admirals, one with jurisdiction over the entire Atlantic coast, and the other the Pacific, who will coordinate all the activities of the various branches of the local, State, and Federal Governments, now responsible for waterfront security.

Personnel Expansion

The increased activities of the Coast Guard have resulted in the greatest expansion in the number of personnel in service history. With approximately 60,000 men already in the service, enlistments are continuing at an ever-increasing rate, with the goal set at an authorized strength of 128,000 men. The service expects to reach its full authorized strength before July, 1943.

This tremendous expansion in the number of enlisted men, quickly over-taxed the training facilities normally maintained by the service, with the result that many new training stations had to be built. Eight major training stations have been newly constructed or greatly enlarged during the past year. In addition to these facilities, many of the Coast Guard organizations in the naval districts have established their own training centers, wherein recruits are trained for service in that particular district. A corresponding increase in the number of specialists' schools, such as radio schools and machinist mate schools, has also been necessary.

Officer Training

Officers, too, in ever-increasing numbers are now being trained by the Coast Guard. At the Coast Guard Academy at New London, Conn., the service is currently training 300 reserve officers a month. These officers are selected from college graduates, possessing necessary qualifications, who are given an intensive course of instruction covering a period of 90 days. During this time, the service endeavors to acquaint the prospective officers with the problems they may encounter at sea, and imbues in them, as far as possible in this short time, the practical knowledge needed by a Coast Guard officer. The officer ranks are further augmented by the promotion to commissioned status of veteran warrant officers and enlisted men who have proven their competence to serve as officers. Civilians, with special training of use to the service, may also become commissioned officers.

Shipbuilding Program

The shipbuilding program has been stepped up to meet the increased Coast Guard duties and to offset a depletion in the number of large cutters, caused by transfers and assignments of these cutters to other services and duties. Many of the larger Coast Guard cutters are now engaged side by side with the regular Navy vessels in convoy and patrol duties. As replacements for the 10 large cutters which were transferred to Great Britain under the terms of the Lend-Lease Act, before our entry into the war, the service has awarded contracts for a fleet of 13 new cruising cutters, 255 feet in length. Two of these cutters will be built at the Coast Guard Yard at Curtis Bay, Md., on the new shipways now rapidly nearing completion.

Contracts have also been awarded for a fleet of massive ice-breaking cutters which will be used in maintaining navigable channels for as long as possible each year on the Great Lakes and in Northern ports as an important contribution to the war effort.

In addition to these large cutters, hundreds of small patrol craft are now being constructed in shipyards throughout the country. Many of the larger types of these patrol craft will be used in anti-submarine activities along our coasts. Boats of this type already in service are performing excellent work in combating the submarine menace.

Coast Guard Reserve

The Coast Guard is also enlisting the services of privately-owned boats, ranging in size from luxurious yachts to small cabin cruisers. These boats are commissioned in the Coast Guard Reserve fleet and assigned to those duties for which they are best qualified. Large seaworthy craft are equipped with radio, machine guns, detector devices, and other necessary equipment and are used in anti-submarine patrol and convoy duty. Smaller craft are used in inshore patrol activities and by captain of the port organizations for patroling harbor areas.

The owners of such craft may remain with their craft, if they so desire, by enlisting in the Coast Guard Reserve. They are given appropriate Coast Guard ratings and are entitled to all benefits enjoyed by men in the regular service.

"The fighting of waterfront fires has long been handicapped by the lack of fireboats in most ports and harbors. To meet this, the Coast Guard has purchased approximately 250 boats, each of which will carry pumping units insuring a minimum water-throwing capacity of 2000 gallons per minute. A specialized type of portable pumping unit has been developed and purchased solely for use on piers and other waterfront facilities. A special school has been established for training the crews of these fireboats and pumping units. And, in addition, the Coast Guard has been enlisting in petty officer ratings trained firemen. While it will soon be operating the largest fleet of fireboats in the world, the Coast Guard in no way intends to supplant the responsibility of municipal fire departments, but only to supplement them as far as waterfront fires are concerned."

LARGE FLEET OF FIREBOATS BUILDING FOR COAST GUARD

A FLEET OF 252 boats, 101 of which embody a new design in propulsion and fire-fighting machinery, is being formed by the United States Coast Guard to provide the waterfronts under its care with protection against fire.

The first fireboats ever built as such for the Coast Guard, the 101 craft of new design are being constructed by the Hanley Engineering Service, Prospect, Ohio, and the first to be completed is now undergoing tests at Washington, D. C.

Assuming the responsibility of guarding all waterfronts in the United States, the Coast Guard realized that fire was a prime danger and set about to assemble its fire fighting fleet. Accordingly, it ordered 101 boats from the Prospect firm, acquired 120 others from private boat owners and sent them to yards for conversion, and ordered the remaining 31 from firms in various parts of the country.

The Hanley boats are equipped with four pumps which are used not only for propelling the craft, but also for pumping water upon fires. In propelling the boats forward, the pumps draw water in through a valve in the bow and eject it through a valve astern. The reverse process is used in backing the boats. The pumps are so designed that they can be used to maneuver the craft when at the scene of a fire, and at the same time pump 800 gallons of water a minute apiece at 120 pounds pressure.

With an overall length of 30 feet 6 inches, a beam of 10 feet 6 inches, and a draft of 18 inches, the boats can operate virtually anywhere. They probably will be operated by four-man crews.

While the fireboats to be built for the Coast Guard by the Hanley Co. are the first jet-propelled vessels to be built specially for the service, the Seattle district some time ago made successful use of jet propulsion. At the Seattle Harbor Patrol Base, a number of Lundeen lifeboats, a type not now used for regular service, have been equipped for self propulsion through a jet arrangement somewhat similar to that on the Hanley boats. These boats, used for fire fighting, mount one pumper unit of 500-gallon-per-minute capacity, or two smaller units.

SUPERCHARGED TWO-CYCLE DIESELS

SULZER BROS. DEVELOP NEW TYPE OF OPPOSED-PISTON DIESEL ENGINE

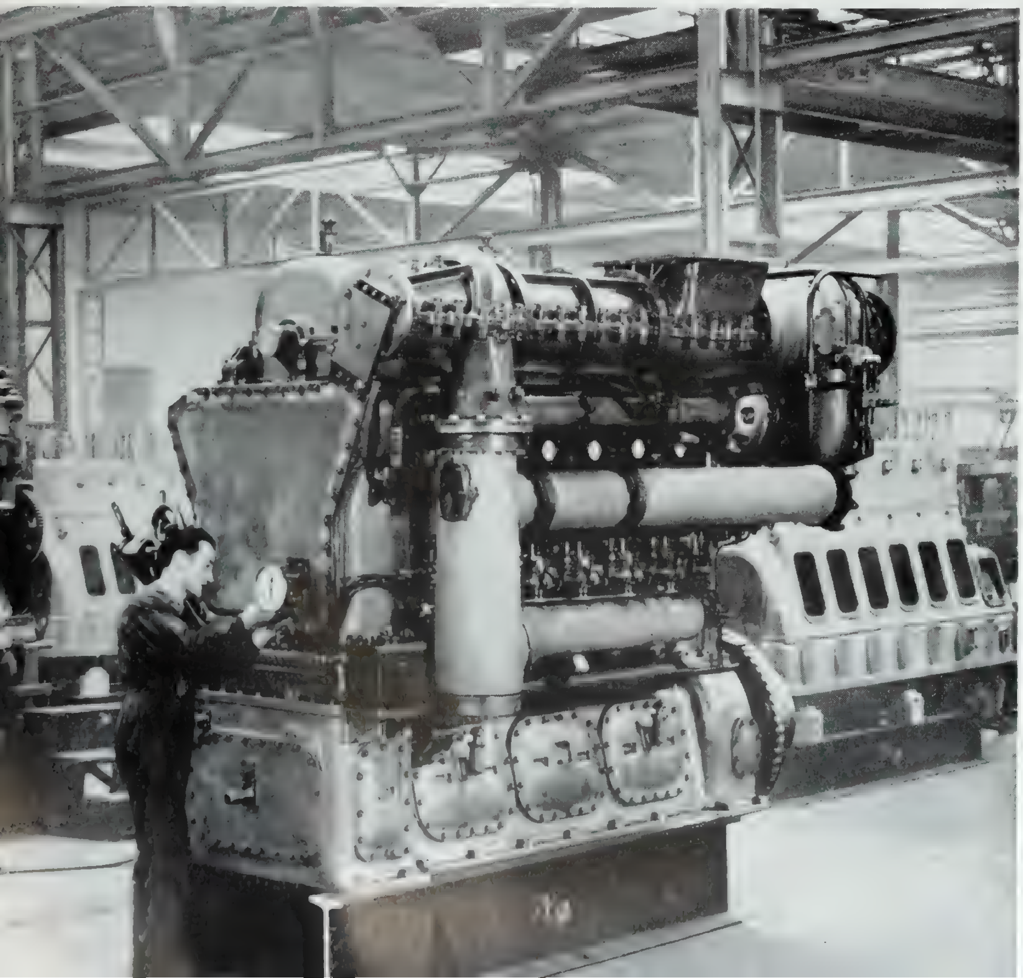
In RECENT YEARS, much of the development work by diesel engine manufacturers has been along the line of obtaining the greatest possible concentration or "density of output" for a given weight of engine. Working along this trend, Sulzer Brothers of Winterthur, Switzerland, have been experimenting with high-pressure supercharging of their two-cycle diesel engine and have achieved some noteworthy results.

The firm was sufficiently impressed with the results of its research work and the performance of experimental engines that it began placing in production its normal two-cycle, single-acting engines adapted to the new system and working on supercharges of 2 to 2½ atmospheres absolute, or 14 to 21 lbs. above atmospheric pressure. This results in a mean effective pressure of 170 psi, or practically double the mep when operating without supercharge.

The two-cycle diesel must, of course, be supplied at all times with plenty of clean scavenging air if it is to run with any degree of efficiency, or at low speeds run at all. For this reason, it is impracticable to run a two-cycle engine on the ordinary exhaust turbine supercharging, which works so well with the four-cycle diesels. In the Sulzer two-cycle supercharging system, the scavenging pump driven mechanically by the engine is redesigned to be used as the compressor, and the exhaust gas turbine is mechanically connected to the crank shaft to supply additional output.

In order to take fullest advantage of this system, Sulzer Bros. have designed and are placing in production a new design of opposed-piston, two-cycle diesel engine. The first of these engines had four horizontal cylinders, each of which has a diameter of 190 mm. (7.48 inches) and a piston stroke of 600 mm. (23.62 inches). The normal speed of this engine is 750 rpm, which gives a piston speed of 1475 feet per minute. The supercharging pressure is normally 14 lbs. above atmosphere, and the mean effective pressure 170 psi. At the rated full load speed, the output is 1370 bhp and the fuel consumption 0.35 phbp hour. This engine has had over 3000 hours of full load operation and has shown no mechanical or combustion difficulties, running with a clear exhaust.

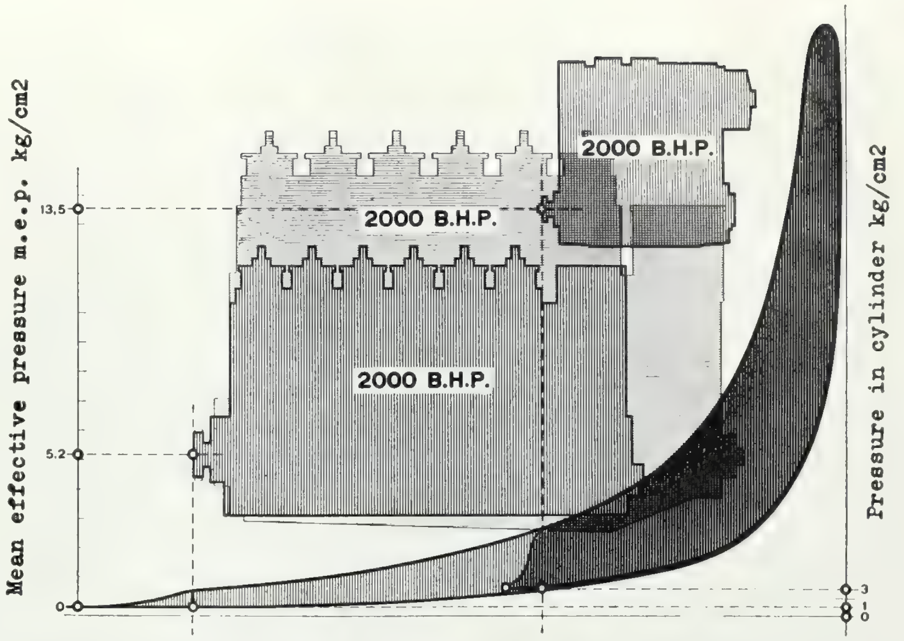
A very interesting extension of the supercharging experiments carries the supercharging up to 70



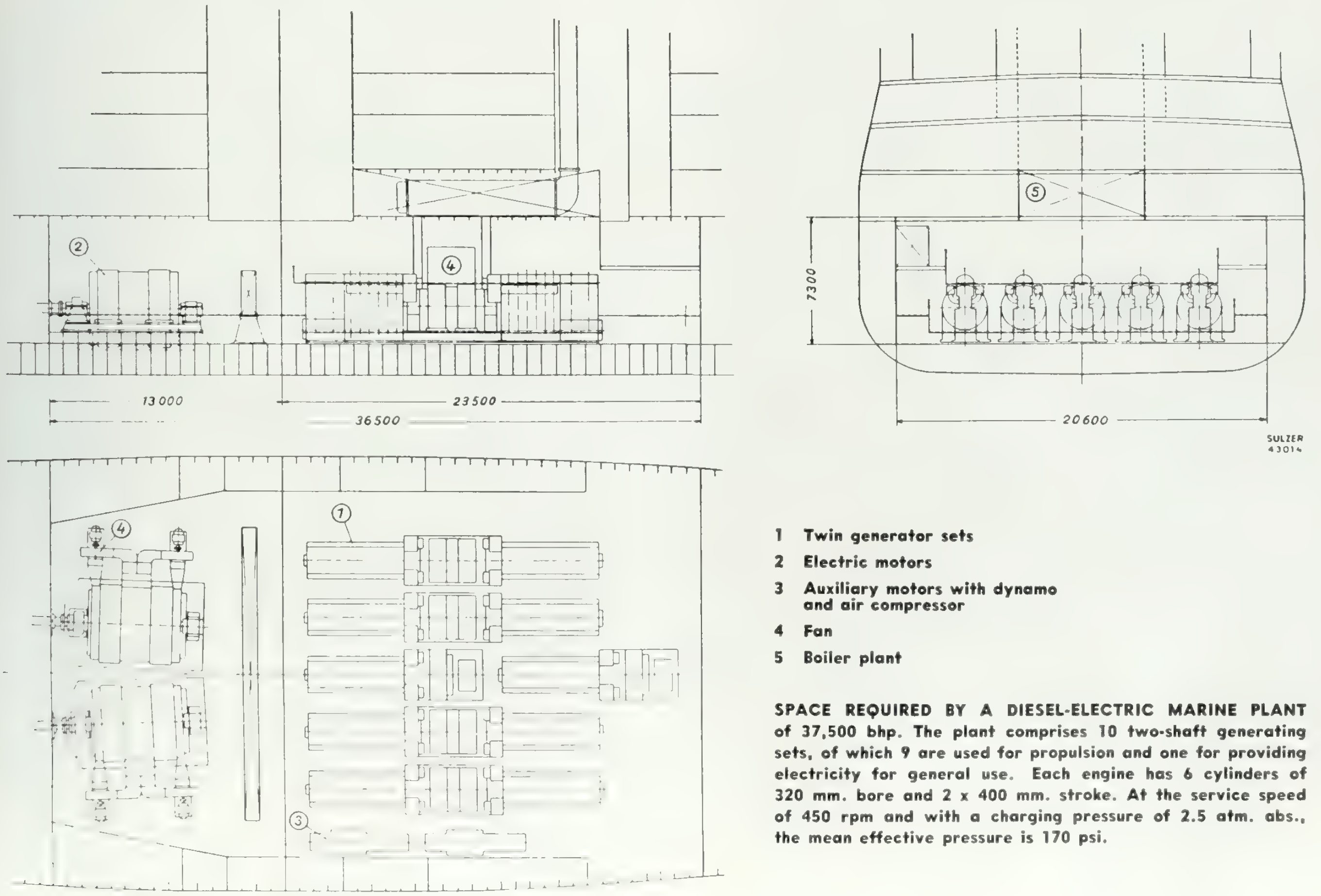
THE SULZER DIESEL in the Sulzer Works at Winterthur, Switzerland. This is the two-stroke, two-shaft, opposed-piston engine, supercharged to 2 atm. abs. and developing 1560 bhp at 850 rpm.

psi above atmosphere, at which point the output of the diesel engine is just equal to the input of the compressor and the exhaust gas turbine output is the only available energy for power applications. This opens up a very interesting use of the diesel engine cycle as a power gas generator for the gas turbine. The experiments have been carried out along these lines, and it has been demonstrated that using diesel engine cylinders as combustion chambers for the production of power gas will produce a gas turbine power plant whose overall weight will compare very favorably with those of high pressure steam turbines, and will operate on overall thermal efficiencies of from 35 to 40%.

The new design of supercharged two-cycle Sulzer diesel engine, as now in production, has six opposed-piston vertical cylinders, each with a diameter of 180 mm. (7.1 inches) and a combined

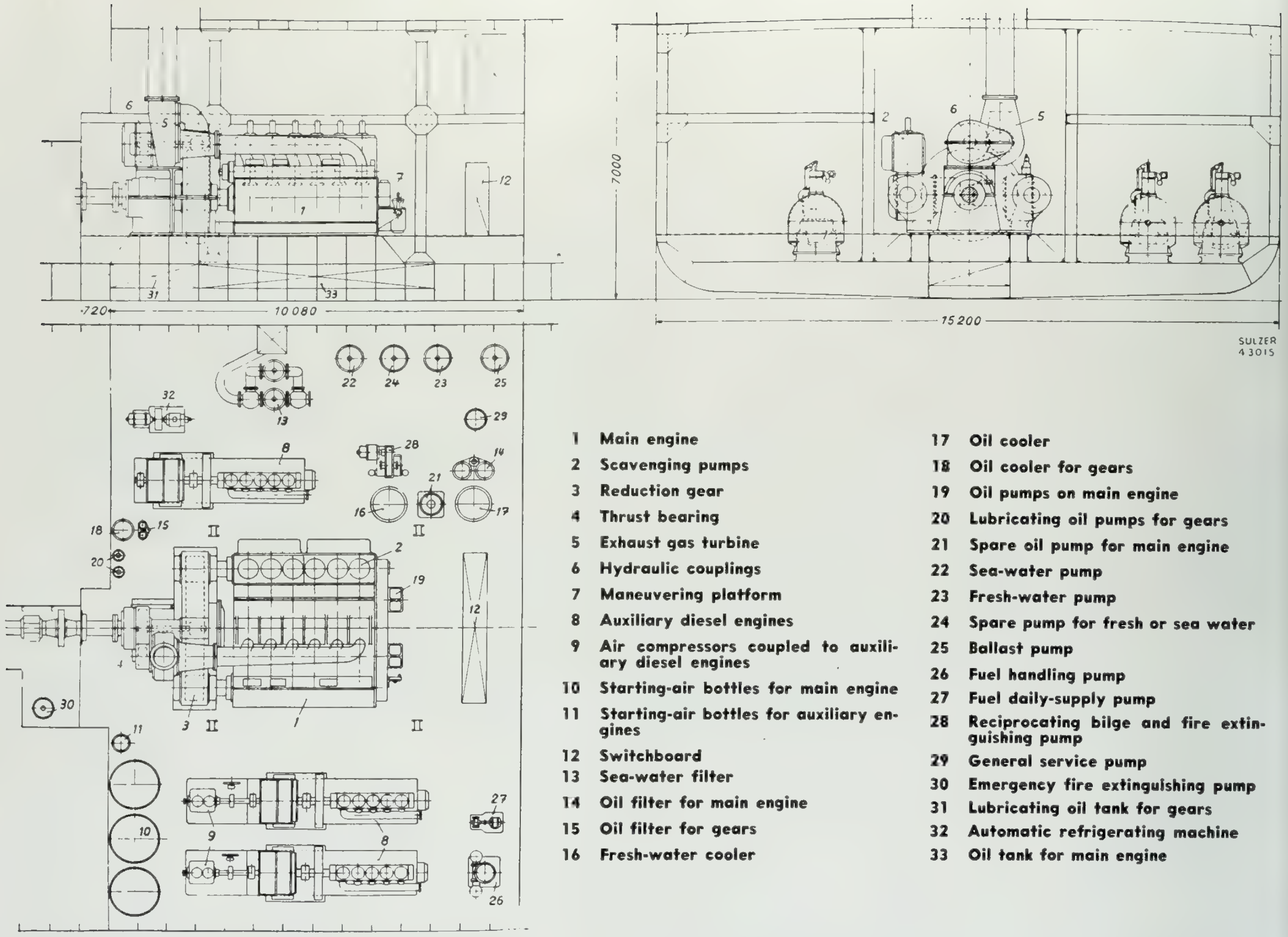


COMPARISON between the space required by a non-supercharged 2000-bhp, two-stroke diesel engine with crosshead; a non-supercharged 2000-bhp, trunk-piston, two-stroke diesel engine; and a 2000-bhp, two-stroke, opposed-piston diesel engine supercharged according to the Sulzer process. The darker indicator diagram of the supercharged engine shows the work done in the diesel cylinders. The work resulting from the exhaust gas turbine and the supercharging compressor is, as regards area, almost identical with the lighter shaded area, lower diagram area of the non-supercharged engine.



1 Twin generator sets
2 Electric motors
3 Auxiliary motors with dynamo and air compressor
4 Fan
5 Boiler plant

SPACE REQUIRED BY A DIESEL-ELECTRIC MARINE PLANT of 37,500 bhp. The plant comprises 10 two-shaft generating sets, of which 9 are used for propulsion and one for providing electricity for general use. Each engine has 6 cylinders of 320 mm. bore and 2 x 400 mm. stroke. At the service speed of 450 rpm and with a charging pressure of 2.5 atm. abs., the mean effective pressure is 170 psi.



1 Main engine
2 Scavenging pumps
3 Reduction gear
4 Thrust bearing
5 Exhaust gas turbine
6 Hydraulic couplings
7 Maneuvering platform
8 Auxiliary diesel engines
9 Air compressors coupled to auxiliary diesel engines
10 Starting-air bottles for main engine
11 Starting-air bottles for auxiliary engines
12 Switchboard
13 Sea-water filter
14 Oil filter for main engine
15 Oil filter for gears
16 Fresh-water cooler
17 Oil cooler
18 Oil cooler for gears
19 Oil pumps on main engine
20 Lubricating oil pumps for gears
21 Spare oil pump for main engine
22 Sea-water pump
23 Fresh-water pump
24 Spare pump for fresh or sea water
25 Ballast pump
26 Fuel handling pump
27 Fuel daily-supply pump
28 Reciprocating bilge and fire extinguishing pump
29 General service pump
30 Emergency fire extinguishing pump
31 Lubricating oil tank for gears
32 Automatic refrigerating machine
33 Oil tank for main engine

MARINE INSTALLATION of 3900 shp. The horizontally arranged two-stroke, two-shaft opposed-piston engine comprises 6 cylinders of 320 mm. bore and 2 x 400 mm. strke. At 448 rpm, the mean effective pressure is 142 psi. The synchronizing gear is designed as reduction gear and with the large wheel drives the propeller shaft at 112 rpm. The scavenging and charging air is here supplied by reciprocating scavenging pumps; it could be supplied by rotary blowers. The exhaust gas turbine works on the large wheel of the synchronizing gear through a hydraulic coupling.

stroke of 450 mm. (18.1 inches) supercharged at 2 atmospheres absolute, a little over 14 psi above atmospheric pressure. Running at its rated speed of 850 rpm, this engine delivers 1560 bhp. Our illustration shows this engine.

Marine Application

There are many capacities and cylinder sizes in design and many sizes of cylinders in the conventional type Sulzer two-cycle engine have been adapted to and tested under high supercharging.

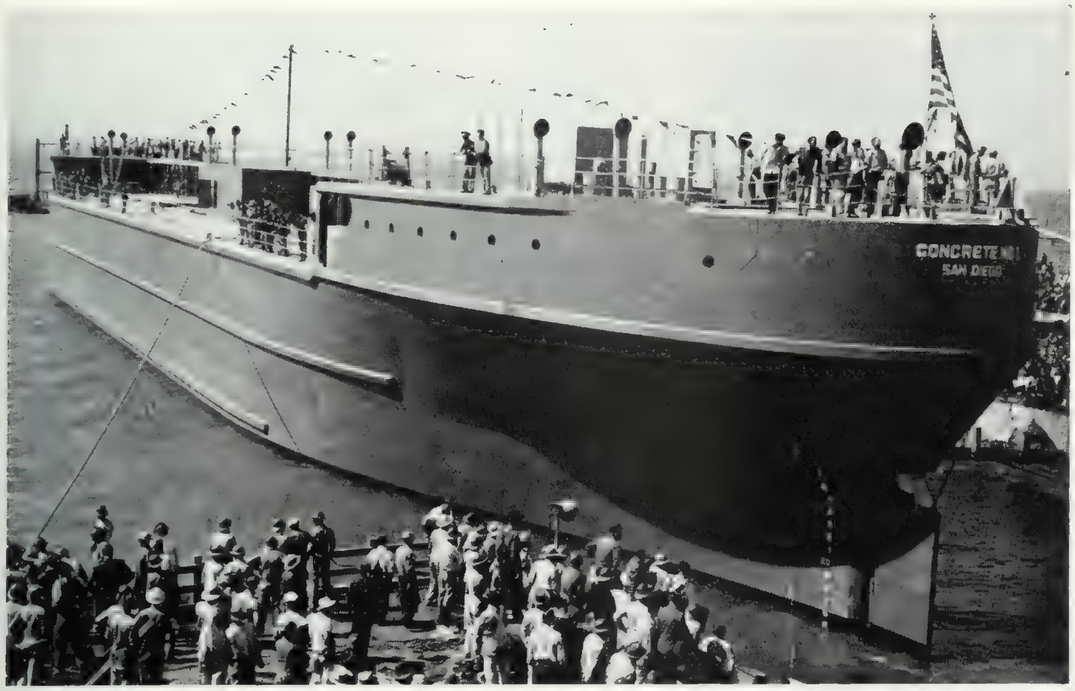
A very interesting proposal is shown in one of the illustrations herewith for a marine propulsion power plant of 3900 shp. The engine of this plant is designed with six opposed-piston cylinders, each of 320 mm. (12.2 inches) bore and 800 mm. (31.5 inches) combined stroke. At 448 rpm of this engine with 2 atmospheres absolute supercharging, the mean effective pressure is approximately 142 psi, and the output is 3900 shp.

It will be noted in the layout that the synchronizing gears between the crank shafts are arranged as a single-speed reducing gear set, with the large central gear driving the propeller shaft. The exhaust turbine is connected to this large gear through a hydraulic coupling and speed reducing gear. This engine is directly reversible, the hydraulic coupling of the exhaust gas turbine being arranged so that it is automatically emptied on reversal.

The machinery as shown can find ample space in an engine room 40% shorter than that required for a non-supercharged, direct-coupled diesel engine.

The piston speed with this plant is under 1100 feet per minute. The reduction ratio between engine and propeller is 4 to 1, the propeller turning at 112 rpm. Note that the plant includes three diesel-drive generators, each of 120 kw capacity. The entire machinery space is about 35 feet long and there is no crowding.

This type of diesel is perfectly adaptable to the electric drive. Using the same size as in the marine application just described but with vertical cylinders, a twin-screw electric drive of 37,500 shp requires ten generating sets and carrying the supercharge to 2½ atmospheres absolute, thereby increasing the mep to 170 psi and the output correspondingly. The proposed arrangement is shown in an illustration.



"Concrete No. 1" . . .

BUILT BY Concrete Ship Constructors of National City, California, is here shown coming out of its building basin. This 8000-ton oil tanker barge, the first concrete vessel to be built in this country in over 24 years, will be towed by a powerful tug.

Launched . . .

FIRST CONCRETE VESSEL SINCE WORLD WAR I

BEFORE AN interested and enthusiastic audience of 5000 persons, the concrete oil barge Concrete No. 1 was launched into San Diego Bay at 1:00 p.m. October 13, 1942, from the plant of her builders, the Concrete Ship Constructors, at National City. This is the first of some one hundred concrete vessels on order for the Maritime Commission and under construction at several yards scattered throughout the Atlantic, Gulf and Pacific coastal ports. She also is the first concrete vessel to be built in the United States in over 24 years.

The launching ceremony opened at 11:00 a.m. with the Victory Boy's Band of Sweetwater High School playing the "Star Spangled Banner" following which the **Rt. Reverend John B. Cotter,** Vicar General of the Diocese of San Diego, pronounced the benediction on the vessel.

The master of ceremonies, **Fred A. Sykes,** then introduced the officials and guests, which included: **Carlos Tavares,** representing the Tavares Construction Company; **R. S. Seabrook,** representing the Concrete Ship Constructors; **John Meents,** superintendent of construction; **Capt. Laurence Impey** of the British Army; **Edward Wilson,** radio operator on a merchant ship torpedoed in a convoy en route to Russia; **K. M. Walker** and **C. R. Barrett,** representing the American Bureau of Shipping; and others.

Following the introductions, the Victory Band played "The Leathernecks" in honor of the United States Marines. The flower girl, **Audrey Meents,** daughter of **John Meents,** presented large bouquets of American Beauty roses to **Mrs. Carlos Tavares,** the sponsor, and to **Mrs. R. S. Seabrook,** the matron of honor.

Representing the contractor, **D. M. Callis** spoke briefly to tell of some of the many problems which had to be overcome before the ship was completed, complimented the construction crews for their cooperation and on the fine work resulting, and vouched for her as a good ship.

Acting for Admiral R. S. Holmes, Commandant of the 11th Naval District, who was unable to be present, was **Captain F. P.**

Conger, USN, District Industrial Manager, who told of the importance of the merchant marine in bringing up supplies for the armed forces on the many fronts.

Following a rendition of "The Old Army Game" by the Victory Band came the principal address of the day given by **D. W. Fernhout,** Chief Plant Engineering Section of the U. S. Maritime Commission, who praised highly the work of the Concrete Ship Constructors in launching the first of the concrete vessels on the Commission's program of construction. Mr. Fernhout pointed out that this first ship was five months in the building dock, a good record for the first vessel, considering that so many problems had to be met and mastered; praised the construction crews for the quality of their work; challenged them to redoubled effort, now that the lessons embodied in the first ship had been learned; and asked for a fulfillment of the entire contract covering twenty-two such oil tank barges by the end of 1943.

Sponsor, matron of honor, flower girl, and master of ceremonies then entered a bunting-decorated box suspended from the gantry crane and were hoisted to a position at the stem of the ship at the level of the forecastle deck. Through the public address system connected to a microphone on the sponsor's box could be heard every word of the sponsor, and even the sparkling crackle of the champagne, as Mrs. Tavares crashed the bottle across the stem and announced, "I christen thee 'Concrete No. 1' and may God bless you!"

Amid the ensuing cheering the band broke out with "Anchors Aweigh," as the concrete caisson gate at the entrance to the graving dock in which the vessel was built was towed away and Concrete No. 1 moved out into San Diego Bay to be moored at the outfitting dock for the finishing touches.

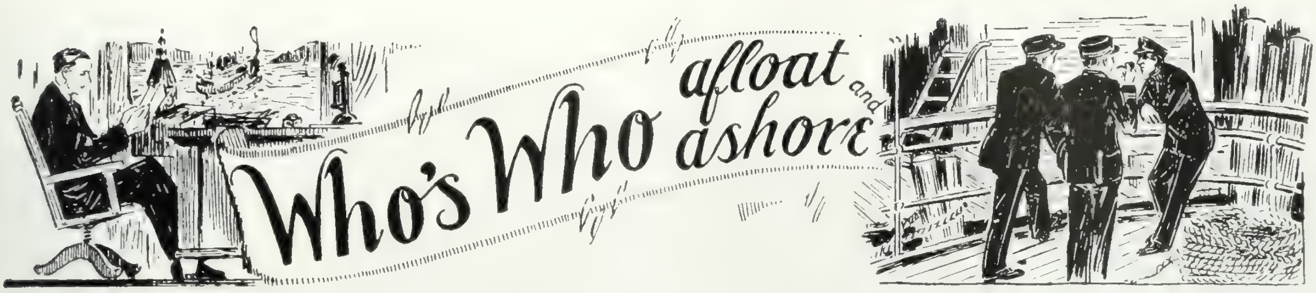
These concrete vessels are not self-propelled, but will be towed by powerful tugs designed and built especially for the purpose. This saves the bottleneck of engines and other machinery required for self-propelled vessels. Also, these oil tankers may be called on to carry cargoes to ports without storage facilities and may be required to act as floating storage tanks while the towing vessel returns with an empty barge to a loading port for a return load.

The general characteristics of these concrete oil barges are: length overall 375 feet, beam 56 feet, depth 38 feet, light draft 16 feet 9 inches, load draft 29 feet 6 inches, displacement loaded 14,750 tons, and cargo capacity 8000 tons. Lumber used in forms was 1,200,000 feet, most of which is used again in following vessels. Cement required for one vessel is 8750 barrels, concrete in one ship 3100 cubic yards, weight of vessel complete 6750 tons.

While the keel of the first ship was laid on May 1 and the time to launching required 165 days, it is expected that the following ships will require but a fraction of this time in view of the great amount of experimental work done on Concrete No. 1.

Launching Party

D. W. FERNHOUT, Chief of Plant Engineering Section of the Maritime Commission, speaking. Seated from right to left: D. M. Callis, Naval Architect; Mrs. F. P. Conger; Capt. Conger, USN; Mrs. R. S. Seabrook; Fred A. Sykes (arm raised); Mrs. Carlos Tavares, the sponsor (partly hidden); Audrey Meents, flower girl (also partly hidden); Rt. Rev. John B. Cotter; C. R. Barrett and K. M. Walker of American Bureau of Shipping; H. H. Disbrow; N. J. Allinger; Gregory Smith; two unidentified guests; and Ens. W. B. Adams, USN.


Who's Who afloat and ashore

Edited by Jerry E. Scanlon

Eddie Harms A Commander

The appointment of **Edward H. Harms,** operating manager of Pope & Talbot Inc., McCormick Steamship Co. Division, as commander in the United States Coast Guard Reserve, with headquarters in San Francisco, was announced in October.

Commander Harms, one of the youngest men in point of years to receive this high rating, is one of the best-known and most popular American steamship executives.

In 1941 he directed the preparations and execution of the 15th Annual Convention of the Propeller Club of the United States and the American Merchant Marine Conference, both at San Francisco. This was an all-time record meeting of shipping leaders and shipbuilders, and won for Commander Harms the acclaim and gratitude of the marine fraternity of the nation.

Born, reared, and educated in the San Francisco Bay area, Commander Harms has been identified with shipping and marine activities for the last 19 years. Until his entry into the U. S. Coast Guard service, he has been playing a major part in the handling of overseas commerce for the American and Allied forces. News of his commission was received with approval by shipping men along the Pacific slope.

In his new duties, he will be in charge of Naval Auxiliary Offices to be opened at 244 California Street. Commander Harms, formerly residing in Berkeley, now lives with his wife Dorothy and their son Robert in San Mateo.

Furuseth Honored

A ship is sailing the seas in war service which bears the name of the "S.S. Andrew Furuseth" in honor of the memory of one of the greatest friends the sailormen of all nations ever had. The vessel is a Liberty type carrier, and is under the management of the Matson Navigation Company.

The christening cermonies attested to the respect in which the late head of the Sailors Union of the Pacific was held. For at the ship christening were leaders of the shipping industry as well as the ordinary seamen in whose behalf this "Saint of Sailors" carried on untiringly to make the life of the sailor a better one at sea.

Navy in Charge of Port

The Navy is now in charge of all harbor facilities at Redwood City. The suburban Bay port officials agreed to the terms of the Navy officials after an inspection.

All of the ten acres surrounding the piers and the existing warehouses are now under Government control. The Redwood City Harbor will serve as an auxiliary dockage area if the necessity arrives.

That similar facilities in the San Francisco Bay area will be taken over by the Navy was indicated late this month.

For the Duration

Friends were advised that **Van Cortland Short,** assistant traffic manager of the United States Lines for the last six years and well known on the Pacific Coast, is now a major in the Army Transport Service. He is attached to the New York Port of Embark-

COMMANDER EDWARD H. HARMS

ALFRED F. SMITH
Recently appointed President of Los Angeles Shipbuilding and Drydock Corporation.

ation. Major Short has been with the United States Lines or affiliated companies since 1915.

U. S. S. Rest Homes

Following a survey by **Philip Ketchum,** former director of the National Youth Administration and now regional director of the United Seamen's Service for the Pacific Coast, rest homes for officers and men of the Merchant Marine on the West Coast are under way. Survey of sites in San Francisco, Portland, Seattle, Los Angeles and San Diego have been made.

Harry Lundberg, secretary-treasurer of the Sailors' Union of the Pacific, presented evidence to show that more than 50 per cent of the merchant seamen escaping from torpedoed ships on the world fronts were from Pacific Coast ports.

The United Seamen's Service is providing medical and recreational facilities for the heroes of the merchant marine in the United States and abroad.

A Liberty for The Negroes

For the first time in the record of the American Merchant Marine a negro will command a United States flag ship.

The negro master mariner is **Captain Hugh Mulzac** and he will command this month the Liberty type freighter Booker T. Washington, named in honor of the great colored educator.

The vessel was built by the California Shipbuilding Corporation, Wilmington, California. She is expected to be ready for sea the end of this month.

Captain Mulzac, of Brooklyn, N. Y., has held a master's certificate for 20 years. He was chief officer during the last war, and was skipper of the Yarmouth when this ship operated for the Black Star Line for a short period. He is 56 years of age and will sail with a crew of all negro officers and men.

Retired

W. B. Kanes, for twenty-three years employed in the Los Angeles and Wilmington offices of the Matson Navigation Company, has retired. He was freight agent until his retirement. He is succeeded by **D. W. Ford,** formerly claim agent.

Limitation on O. S. Licenses

The Bureau of Marine Inspection offices on the Pacific Coast in conjunction with the War Shipping Administration has programmed a plan which will gradually eliminate ordinary seamen of the merchant marine who lack formal training for sea duty.

Hereafter the Inspection Bureau will not issue certificates for ordinary seamen, except in the case of graduates of the National Merchant Marine training schools. In the past, such licenses have been issued to untrained men, permitting them to go to sea to gain ship duty experience.

Hero Decorated

Frank A. Santina of Montclair, N. J., has the high honor of being the second officer to be awarded the Merchant Marine Distinguished Service Medal for heroism "above and beyond the call of duty."

Admiral Emory S. Land, chairman of the Maritime Commission, presented the award to Second Officer Santina at the annual banquet of the American Merchant Marine Conference in New York, October 14. Mr. Santina is well known on the Pacific Coast as he sailed with various lines operated from West Coast ports.

The award was for Mr. Santina's action as one of the two survivors of a lifeboat which was blown high into the air by a torpedo as the crew was attempting to leave their sinking vessel. In spite of severe injuries, he swam back to his ship, launched a lifeboat and saved the life of a helpless shipmate.

Warren Lee Elected Wilkening Vice-President

At its September meeting, the board of directors of the Wilkening Manufacturing Co., Philadelphia, elected **Mr. Warren K. Lee** to the office of vice president. He has been a member of the Wilkening organization for over ten years, in charge of the sale of Pedrick piston rings to the manufacturing or original-equipment market. His headquarters is the Lexington Bldg., Detroit.

Graduating from Cornell University with an M. E. degree, Mr. Lee served as lieutenant in the

WARREN K. LEE

Engineer Corps in World War I with a record of 1½ years overseas. Returning from the war, he joined the North East Electric Co. of Rochester, N. Y., and when General Motors purchased that company in 1929, was transferred to Overseas Motor Service, the export division in New York City, where he was sales manager until he joined Wilkening.

Land Under Fire

Demand that **Rear Admiral Emory S. Land** be removed from office by President Roosevelt was contained in a telegram by **Joseph Curran,** president of the National Maritime Union. The message from Curran was received at the White House, October 20, and was the outgrowth of a statement Admiral Land is said to have made at the annual New York luncheon of the Investment Bankers Association, to the effect that of his "four pet hates for the duration, organizers were the first," and in his opinion, "they should be shot at sunrise."

Shifts and Changes

Thomas Holcrow, former Oakland manager for the American-Hawaiian Steamship Company, is now attached to the staff of the Fireman's Fund Insurance Co.

R. R. Raymond, well known in Pacific Coast shipping circles, has been transferred from the Chicago to the New York offices of Norton, Lilly & Co. **J. G. Wixsted** takes over Raymond's office in Chicago.

Otis Shepard, member of the firm that bears his name, announced opening of offices in San Francisco as quickly as arrangements can be made, following a visit from his New York offices to the Pacific Coast. The firm formerly operated intercoastal.

Stanley H. Hartley is now Chief Officer on the S.S. West Celeron and **Charles Jacobson** was appointed Second Officer by Marine Superintendent Edward T. Senter of the Grace Line.

Adrien Eectesu is the new Chief Steward aboard the S.S. James Francis. He is well known, having sailed in transpacific liners and cargo ships for a number of years.

For the Duration

Allan McCullogh, formerly chief engineer on Grace Line and Richfield Oil Company tankers, has been appointed an inspector for the U. S. Maritime Commission located in the Bay area. He is a brother-in-law of **R. C. "Ray" Jones,** port engineer on the Pacific Coast for the General Petroleum Corporation. His father, the late **Allan McCullogh,** was a charter member of the M.E.B.A., and one of the best-known marine engineers on the Pacific Coast.

The San Francisco offices of the American-Hawaiian Steamship Company were advised that **George W. White,** manager of their Philadelphia offices, has been certified as a lieutenant colonel in the U. S. Army's Division of Transportation.

M. J. Kenny, assistant to the manager of the Waterman Steamship Agency, has been commissioned as a lieutenant, attached to the War Transport Service, U.S.A.

Julius Kruttschnitt Jr., formerly in charge of the passenger business for the McCormick Steamship Company, joined the Defense Supplies Corporation and has been assigned to Brazil and will make his headquarters at one of the South American republic's seaport cities.

Williams Dimond Agent for Bull

The Williams Dimond Company have taken over the Pacific Coast agency of the A. H. Bull Line of New York, E. L. McCormick, President of the San Francisco concern, reports.

As the first move in the new set-up, the Williams Dimond interests took over the steamer John James Audubon, recently completed, and a captain and chief engineer came here to assume charge of the ship. The Robin Line ships also will be handled by Williams Dimond.

EDWARD J. FLYNN, a member of the sales staff of the Todd Shipyards Corporation, was elected a vice president and member of the Board of Directors of the Todd Erie Basin Dry Docks Inc. on October 20. Born in Centralia, Pa., in 1901, he has been associated with the Todd organization since 1930. He attended Mt. St. Mary's Academy and St. John's Law School in Brooklyn, where he received his degree in law.

The new policy of the Maritime Commission is in line with its policy of private operation as fast as the cargo ships can be spared to carry on such commercial activities of the U.S.M.C. as are practical during the war period.

Commission release indicated several other companies will be receiving ships in a fairly steady stream now that the cargo building program is running ahead of schedule, Pacific Coast operators have been advised.

WSA Foreign Pay Policy

The War Shipping Administration announces that American seamen receiving money in foreign ports will be paid in the currency of the foreign country. While nothing official was made known in line with the new policy, it is believed the U. S. Government's action is a safeguard against American currency getting into Axis hands.

AT GROUNDBREAKING for the new Officers Training School in Alameda. Left to right: Lieut. Commander Ambrose B. Brown, Lieut. Frank Bussy and Norman Peterson.

Davis Merchant Marine Band

A band of 45 American seamen-musicians from New York and other East Coast ports, formerly employed on ocean passenger ships and luxury cruise liners, now being used in wartime service, has been organized under the direction of Charles K. Davis, and will give public performances of concert and dance music in the auditorium of the Seaman's Church Institute, 25 South Street, New York, which will be its headquarters for the Winter Season.

Charlie Davis was the first American bandmaster to be engaged on any ship, sailing from New York in 1913 on the S. S. Vestris to Buenos Aires. Since then his orchestras have sailed to all parts of the world, and at the outbreak of the present war, he was acknowledged the oldest and largest contractor of ships' orchestras and entertainers in America.

It is hoped the formation of this band will help make the American public more "ship conscious," stress the importance of the merchant marine at this time, and provide work for those musicians who have spent many years at sea and are now without ships.

New Home For Officers' School

Commander A. G. Ford, U. S. C. G. superintendent of the Merchant Marine Officers Training School at Governors Island, Alameda, is happily busy these days supervising construction of the new home for the school. This is being built on the old site of Neptune Beach, Alameda, a 36-acre site on the southerly side of Alameda Island. The project is to cost upward of $1,500,000 and is due for completion in January, 1943.

This school has been doing a very fine job in training ships' officers and will be able to function even more efficiently in its new home.

For the Duration

Perry R. Cassidy, former executive assistant, The Babcock & Wilcox Company, is now Lieut. Colonel in the Engineer Corps, U. S. Army. He was a captain in the Coast Artillery in World War I, his last assignment being at the School for Antiaircraft Officers at Fort Monroe. He began his service with Babcock & Wilcox in 1916 and was appointed a vice president of Fuller Lehigh Co. in 1928. Upon the consolidation of Fuller Lehigh with Babcock & Wilcox, he was made an executive assistant of the latter company, holding that position until entering the service. He is a member of the Boiler Code Committee of the American Society of Mechanical Engineers, the American Welding Society, American Society for Testing Materials, American Society for Metals.

HE'S STILL A-SWINGIN'

What do the major league baseball players do when the season closes? The answer would fill a page, but here's one part of it. Tommy Holmes, lead-off man for the Boston Braves, who has taken up his residence in Brooklyn, N. Y., has also found himself a job in the war effort, at the Todd Erie Basin ship repair yard. Swinging the maul ought to keep his batting eye accurate.

LIEUT. COMMANDER ALFRED G. FORD In charge of Governors Island Training School.

SHIPOWNERS'
ASSOCIATION
of the Pacific Coast
San Francisco, Calif.
October 30, 1942

Pacific Marine Review,
San Francisco, Calif.

Dear Sirs:

On the occasion of the writer's resignation as Secretary-Treasurer of this Association, which takes effect October 31st, the writer wishes to express his appreciation of the courtesy shown by you during his 21 years in this office. I hope your publication continues to prosper.

The writer plans to take a short vacation before going into some form of war effort.

With regards to all,

Sincerely,
Nat Levin,
Secretary-Treasurer.

NECROLOGY

GEORGE ANDREW POPE

Lumber and Shipping Leader

The passing of George Andrew Pope on October 16 in his 78th year brought to a close a career of one of the West's pioneers and an outstanding figure in the development of lumber, shipping and allied interests on the Pacific Coast.

Born in San Francisco, Mr. Pope was the son of Andrew J. Pope, who had established one of the first salvage and transportation firms in this section in association with Frederick Talbot, the latter in a short while selling his interests to a brother, Captain William C. Talbot.

Seventeen years ago, in 1925, the Pope & Talbot interests were sold to the Charles R. McCormick Lumber Co., but they were in turn re-purchased by the original firm in 1938.

GEORGE NEIL

At the time of his passing in a San Francisco hospital, Mr. Pope was chairman of the board of directors. His activities also included directorships in the Bank of California, the Burlingame Land and Water Company and the Henry Investment Company.

Mr. Pope was a member of many outstanding organizations and clubs in the country, among them the California Historical Society and the Academy of Sciences.

Surviving Mr. Pope is Mrs. Pope, a daughter, Mrs. Russell Dickson, and two sons, Kenneth, of Los Angeles, and George A. Pope, Jr., the latter a captain in the Quartermaster Corps U.S.A., stationed at the Port of Embarkation, San Francisco.

Popular Passenger Agent

The death of George Neil, general passenger agent of the American President Lines in Los Angeles, on October 9 was received with a shock in Pacific Coast marine circles.

Only 52 years of age, Mr. Neil had been regarded by his family and associates as enjoying excellent health when stricken with a heart attack.

One of the beloved members of the shipping world, George Neil was held in the highest respect and was regarded as an expert on water transportation.

Born in Pawtucket, R. I., George Gordon Neil started his travel experience with the Church Travel Service. During World War I, he served overseas with the 103d Field Artillery. He came back to join the American Express Co. Later he was with the Canadian Steamship Co. In 1923 he became affiliated with the Dollar Line, and when this concern was taken over by the Maritime Commission, George continued on and remained when the American President Lines was created.

His wife Florence Dixon Neil passed away in January 1941. He is survived by a daughter, Alice, and a son, George Gordon Neil.

Prominent Naval Architect

James Barclay, naval architect of the Moore Dry Dock Company and one of the best-known ship designers on the Pacific Coast, died in an Oakland hospital, October 28, aged 59.

Born in Glasgow, Scotland, Mr. Barclay served his apprenticeship at Belfast, Ireland, and came out to Canada at the age of 26 to take a position as chief draftsman in a Canadian shipyard. Before leaving Scotland, Mr. Barclay had the opportunity of working on the design of that great Atlantic blue ribbon holder, S. S. Mauretania (the First).

With the revival of American shipbuilding, due to orders from Europe in the first stages of World War I, Mr. Barclay moved to the United States and became naval architect at the famous Skinner & Eddy yard, Seattle. Here he designed the Skinner and Eddy type of the 8800-ton cargo steamer which made shipbuilding history in those days.

In the early 1920s, he moved to Oakland, California, and became naval architect at the Moore Dry Dock Company.

Mr. Barclay is survived by his widow, Mrs. Christine Barclay, and by one sister, Mrs. Elizabeth Alexander Brown.

Noted Marine Superintendent

Captain Laurence H. Westdhal, for many years marine superintendent for the American President Lines, died on Tuesday, October 27, at his home in San Francisco.

Born in San Francisco and educated in the City's public school system and the University of California, Mr. Westdahl joined the Coast and Geodetic Survey and

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ABOVE: Admiral W. C. Watts, USN (retired) shown presenting the Army-Navy "E" pennant to L. E. Osborne, vice president of the Steam Division of Westinghouse at Lester, Pa.

AT LEFT: Main plant was scene of biggest demonstration of workers.

ARMY-NAVY PENNANTS TO FIVE WESTINGHOUSE PLANTS

REAR ADMIRAL **William Carleton Watts** of the United States Navy recently presented Army-Navy "E" Pennants to five Pittsburgh-area plants of the Westinghouse Electric and Manufacturing Company "for high achievement in the production of war equipment." Selected to receive the awards were the Transformer Division at Sharon, Pa., and the East Pittsburgh Division, which includes the porcelain plant at Derry, Pa., Nuttall Gearing Works in Pittsburgh's Lawrenceville section, and plants at East Pittsburgh and Trafford, Pa.

Accompanied by Navy and Army officers, the admiral visited the Derry plant and praised workers for their production of porcelain parts for military communication equipment. The officers also inspected the Trafford works, which makes metal castings for electric motors and generators, in addition to plastic Army helmet liners, and parts for airplanes.

The blue and red Army-Navy flag awarded the East Pittsburgh Division now flies above the giant East Pittsburgh works. Covering almost 80 acres, this plant is now turning out equipment at a rate 60 per cent ahead of 1941 — producing generators to create electricity for war plants, motors to drive machinery, and control and switchboard apparatus to regulate electric power.

Admiral Watts inspected the Nuttall plant and addressed the workers who make gears for naval vessels. Later he presented the production award to the Transformer Division at Sharon, Pa., which manufactures transformers.

Accompanying Admiral Watts and the military party and serving as master of ceremonies was **Milton Cross,** widely known announcer for the National Broadcasting Company. At the Derry plant program, Mr. Cross introduced **Lieut. Commander C. E. Egeler** of the United States Naval Reserve who presented Army-Navy pins to **Charles Brown, Jr., Miss Jean Johnson, John Lyons** and **C. D. Hall,** representing Derry employees.

Army-Navy pins were awarded to all the thousands of employees in Westinghouse plants receiving the production pennants.

Representing employees in the pin presentation ceremonies at the Trafford works were **John A. Metcalfe,** president of Local 601, United Electrical, Radio, and Machine Workers of America, (C. I. O.); **L. F. Bollens,** president of the Association of Westinghouse Salaried Employees; **Miss Catherine Ochs** and **John Smith.**

At East Pittsburgh, employee representatives included **C. H. Smith, Miss Margaret Coburn, Frank C. Russell, Miss Emma Ader, Mr. Metcalfe,** and **Mr. Bollens. Captain F. L. Oliver,** United States Navy, retired, presented the pins. At Nuttall, Lieut. Commander Egeler presented pins to **Dan McKinnon, Frank Wildman** and **Miss Catherine Burke,** who have served a total of 111 years with Westinghouse.

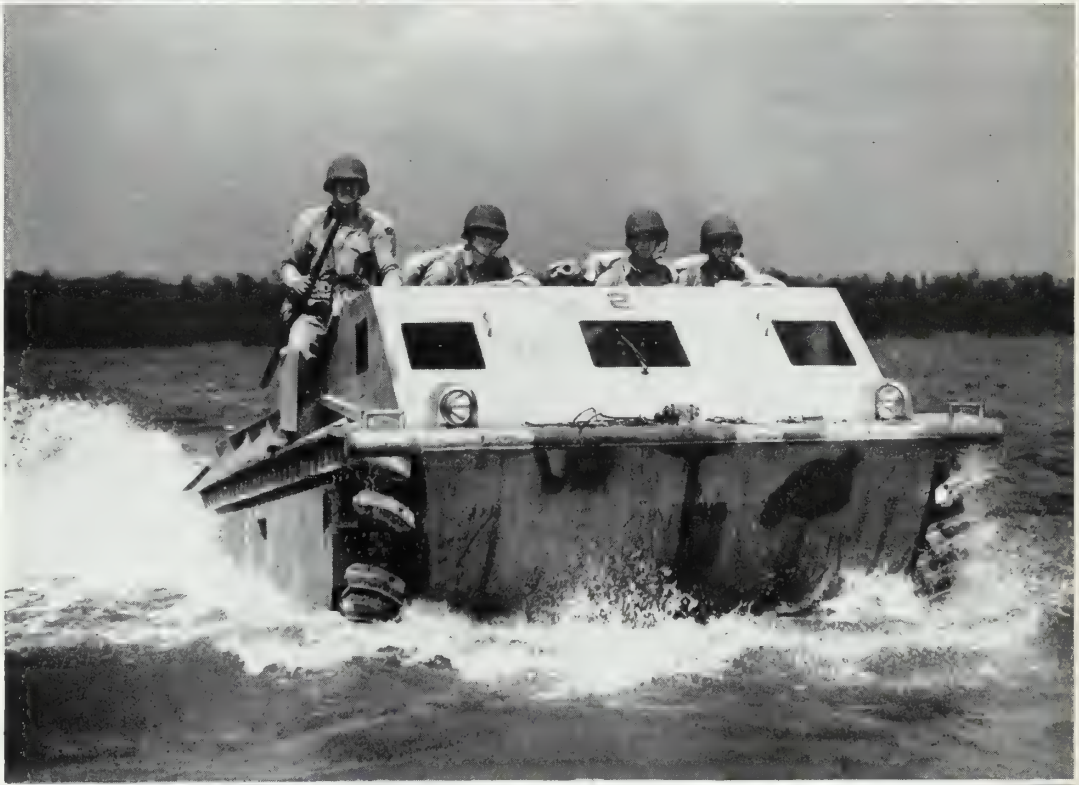
Three 50-year veterans—**Henry C. Bert, James T. Burke** and **James R. Stevens** — received Army-Navy pins at the Sharon ceremonies as representatives of employees. The presentation was made by **Lieut. Commander Roy W. Lewis,** United States Navy, retired.

The official hosts were **W. F. Bailey,** manager at the Derry works, and **G. S. Ryan,** manager of the Feeder Division, in behalf of the Trafford works and its employees. **A. C. Streamer,** vice president, accepted the pennant at the East Pittsburgh plant. **L. R. Botsai,** manager of the Gearing Department, was the official host at the Nuttall plant. **H. V. Putman,** manager of the Transformer Division, expressed appreciation on behalf of the Sharon plant and workers.

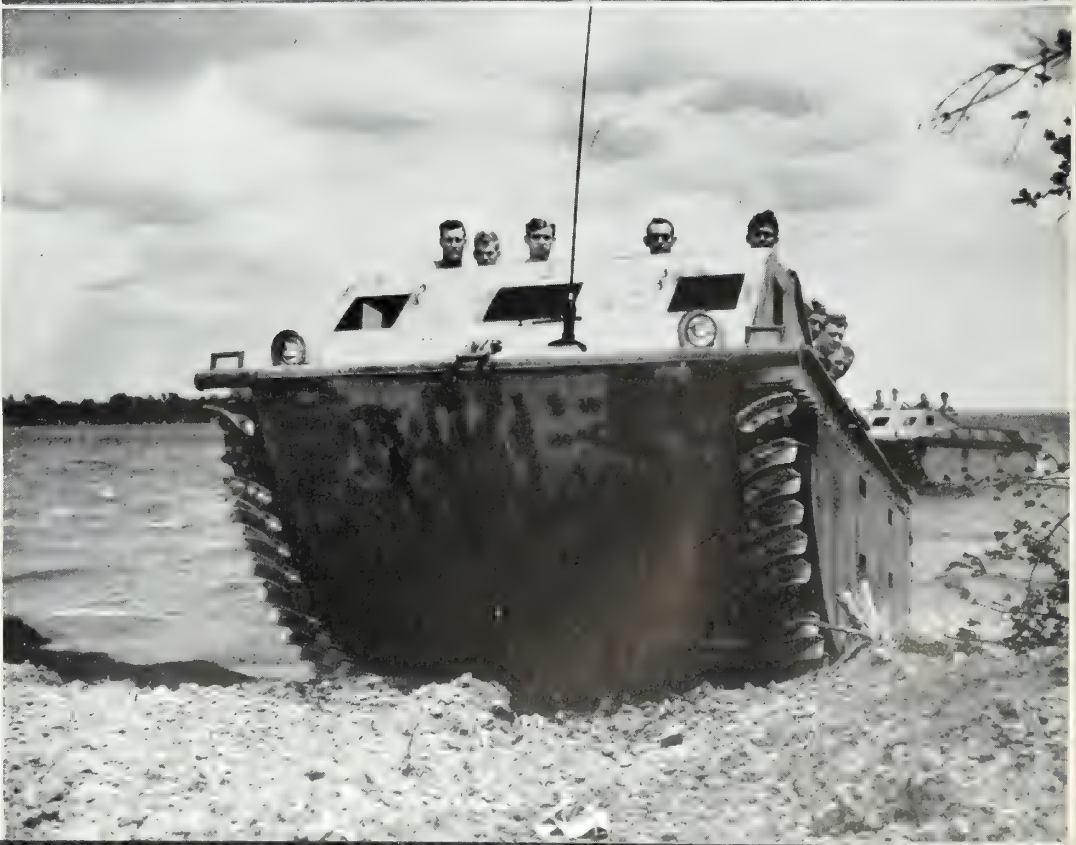
A. W. Robertson, chairman of the board, **George H. Bucher,** president of Westinghouse, and many other top-ranking executives of the company attended the various award ceremonies.

Amphibian

SEAGOING TRACTORS



THE SOLDIERS OF THE SEA have a new troup carrier that serves them well on land and in the water. A special Marine unit, training with an amphibian tractor at New River, N. C., is on its way from a battleship to establish a beach head.

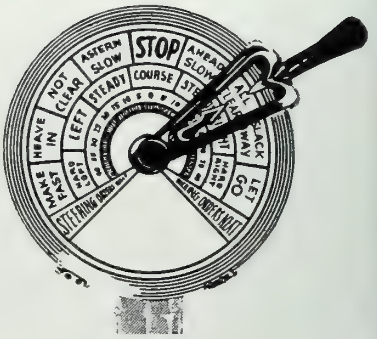


"THE MARINES HAVE LANDED, and have the situation well in hand." A special leatherneck unit, training with new amphibian tractors at New River, N. C., is ready for any shore opposition as its land-and-water troop carrier brings them ashore in full battle gear to establish a beach head.

(Illustrations official OWI photos by Palmer.)

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A DEPARTMENT FOR DECK OFFICERS

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Tonnage of Merchant Vessels

Merchant vessels are subject to wide fluctuations in displacement. The deadweight, or total carrying capacity of many merchant vessels of the same light displacement often varies greatly.

In the early days of shipping, it was believed that for the purpose of assessing charges for tolls, wharfage, etc., there should be a factor that would reflect the vessel's potential earning power rather than the total weight of the vessel when loaded. Eventually, it was decided that the volume of the hull below decks should be used as the basis for determining the vessel's earning power. Rules were then formulated in order to bring about a uniform method for determining this calculation. The present regulations are the result of progressive development of rules for measuring the under deck volume of a vessel. In the case of sailing vessels, almost all of the under-deck space was available for the carrying of cargo and passengers. In later years, with the development of steam power, the situation was materially changed. The boilers, engines, fuel bunkers, water tanks, and other space required by essential machinery, equipment and stores, all occupied space in the vessel which could not be used for the carrying of cargo and passengers. From this fact arose the opinion that the earning power of the ship was more accurately determined by the cargo hold space not required by activities essential to the operation of the vessel. Rules were made defining the conditions to be fulfilled in order that a space should be classified as a non-paying space.

No vessel may be registered in the United States of America until it has been measured for tonnage, and the correctness of the calculations have been certified by the Bureau of Marine Inspection and Navigation of the U. S. Coast Guard.

QUESTION

What is displacement tonnage and how is it determined?

ANSWER

Displacement tonnage is the total weight of the vessel and everything in the vessel, expressed in tons of 2240 lbs. This is represented by the weight of water displaced by the vessel when afloat. If the vessel is loaded to her deepest draft, then the weight of the water displaced is her **loaded displacement.** If the vessel is empty and floating at her lightest draft, then the weight of the water displaced is her **light displacement.** The displacement tonnage of a vessel will vary with the draft, the greater the draft, the greater the displacement.

The displacement tonnage is found by dividing the volume (in cubic feet) of the under-water portion of the vessel by 35, because a cubic foot of average sea water weights 64 lbs., which is one thirty-fifth of a ton of 2240 lbs. In other words, there are 35 cubic feet in one long ton of average sea water, and 36 cubic feet in a long ton of fresh water.

Example:

What is the displacement in sea water of a vessel which has a loaded draft of 24 feet, length along the load water line 450 feet, beam at the load water line 56 feet; the coefficient of fineness is .8?

Solution:

$$\text{Displacement tonnage in sea water} = \frac{\text{L} \times \text{B} \times \text{draft} \times \text{coefficient}}{35} = \frac{450 \times 56 \times 24 \times .8}{35} = 13{,}824 \text{ tons.}$$

Note

The coefficient of fineness of a vessel is the ratio or proportion her under-water form bears to a rectangular shaped block of the same length, breadth and depth. The finer lines a vessel has the smaller will be her coefficient of fineness. With yachts and destroyers the coefficient of fineness may be as small as .45; in a bluff tramp steamer, the coefficient may be as great as .85. Between these two extremes the coefficient of fineness is adopted to suit the requirements of the individual vessel. A coefficient of fineness is always expressed as a decimal number.

Displacement tonnage is used principally in the naval service, and seldom, if ever used in the classification of merchant ships.

QUESTION

What is meant by deadweight tonnage?

ANSWER

A vessel's deadweight tonnage is the difference between the light and the loaded displacement, or in other words, the total carrying capacity of the vessel expressed in tons of 2240 lbs. This figure includes cargo, fuel, water, stores, dunnage, and everything of a portable nature.

Example:

What is the deadweight tonnage of a vessel whose light displacement is 3900 tons and the loaded displacement is 13,824 tons?

Deadweight = Loaded displacement minus light displacement
= 13,824 minus 3900
= 9924 tons

It is evident that this figure, 9924 tons, which represents the total carrying capacity of the vessel, cannot possibly be used entirely for cargo. A deduction must be made for the weight of stores, fuel, water, etc., and all of the various things that the vessel is obliged to carry for the continuation of a successful voyage.

QUESTION

What is meant by gross tonnage and how is it determined?

ANSWER

Gross tonnage and also net tonnage is a measure of capacity, it is not weight. Gross tonnage is the internal capacity of a vessel expressed in units of 100 cubic feet. In determining this gross tonnage, all space which is inclosed within the watertight structure of the vessel below the uppermost structural deck of the hull, with the exception of certain exempted space, is included.

These **exempted spaces** are those which, in addition to being unavailable for carrying cargo, are needed for the increase of the stability of the vessel, such as ballast tanks in the double-bottom space and the forward and after peak tanks. All other spaces are designated as **included spaces.**

The gross tonnage is made up of:

1. The under-deck tonnage.
2. The 'tween-deck tonnage.
3. Tonnage of inclosed spaces above the upper deck.
4. Excess of hatchways.

Explanation of the above items:

1. The capacity, in units of 100 cubic feet, of all the **included spaces** below the tonnage deck is known as the **under-deck tonnage.** The tonnage deck is usually the uppermost structural deck of the hull; however in vessels over three such decks, it is the second deck from below.

2. The capacity of the space, expressed in units of 100 cubic feet, between the tonnage deck and the uppermost structural deck of a vessel is called the **'tween-deck tonnage.**

3. The capacities of the spaces on and above the tonnage deck is not included in computing the gross tonnage unless the space is **inclosed,** meaning that the space has permanent means of being closed from the entry of sea water. For example, on a shelter deck vessel, the space between the upper deck and the shelter deck is not considered an **inclosed space,** provided the required "tonnage openings" are installed in a non-watertight and non-permanent condition.

There are many exemptions in the measurement of inclosed spaces above the upper deck, such as:

(a) All spaces used for passenger accommodation located above the first deck which is not a deck of the hull.
(b) Machinery space.
(c) Wheel house.
(d) Galleys and pantries.
(e) Skylights and domes.
(f) Water closets for the crew and passengers.

4. On account of the high coamings around the cargo hatches giving protection to the hold in bad weather by reducing the probability of flooding the cargo holds, the regulations allow the volume of such hatchways, providing their capacity is not more than one-half of one per cent of the gross tonnage of the hold, to be excluded from the total gross tonnage.

The total capacity of the cargo hatch coamings minus one-half of one per cent of the gross tonnage is known as the **excess of hatchways** and is included in the gross tonnage of the ship.

QUESTION

What is net tonnage and how is it calculated?

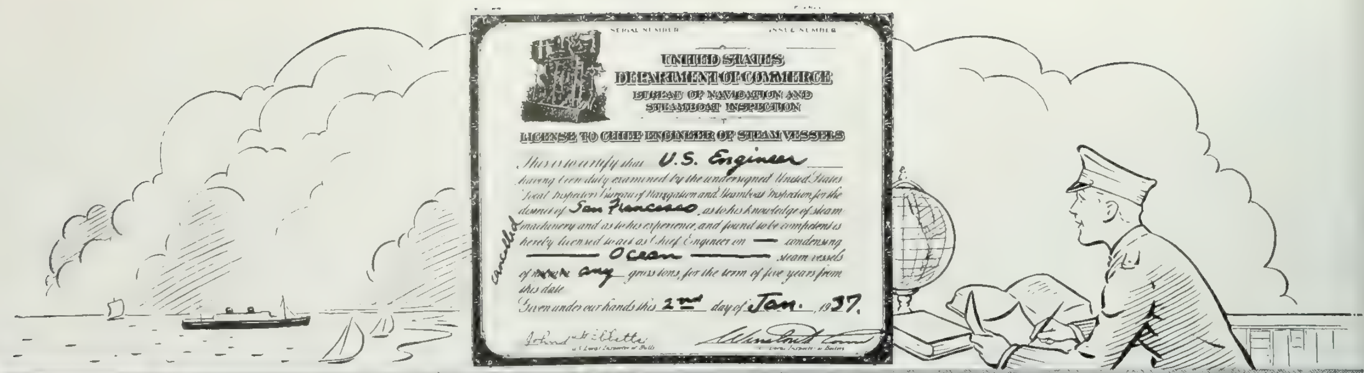
ANSWER

Net tonnage is the gross tonnage minus the capacity, in units of 100 cubic feet, of all non-revenue-paying spaces. These spaces are known as **deducted spaces** and, in general, include all spaces essential for the operation of the ship and not available for the carrying of cargo and passengers.

The net tonnage is sometimes called the **registered tonnage.** The spaces which are deducted from the gross tonnage are required to be permanently marked, hence the legends that appear cut in over the doorways of certain compartments, such as "Certified for Chart Room," and the like. The net tonnage and the vessel's official number are required to be permanently marked on the "main beam" of American vessels; this is usually on the forward inner side of No. 2 hatch on modern vessels.

Roughly speaking, the deadweight of the average cargo

(Page 100, please)



SERIAL NUMBER ISSUE NUMBER

UNITED STATES
DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION AND
STEAMBOAT INSPECTION

LICENSE TO CHIEF ENGINEER OF STEAM VESSELS

This is to certify that U.S. Engineer having been duly examined by the undersigned United States Local Inspectors Bureau of Navigation and Steamboat Inspection for the district of San Francisco, as to his knowledge of steam machinery and as to his experience, and found to be competent is hereby licensed to act as Chief Engineer on — condensing ——— Ocean ——— steam vessels of any gross tons, for the term of five years from this date.

Given under our hands this 2nd day of Jan., 1937.

Cancelled

U.S. Local Inspector of Hulls

U.S. Local Inspector of Boilers

Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

Electric Drive Tankers

VII—Electric Propulsion Equipment

To be more helpful to the practical operative engineer aboard new electric-drive tankers, this section will contain for several months specific quotations and illustrations from operating instruction books, as prepared by the manufacturers of the steam and electric apparatus of many ships now or soon to be in service.

Instructions covering description, assembly and disassembly, and maintenance will be included. Many illustrations may have to be omitted for lack of space.

In general, while these instructions cover specific machines, they are not only illustrative of principles, but typical, and much general and fundamental knowledge can be obtained from them.

The propulsion switch gear and method of control have been covered in previous issues, with the exception of the regulator and amplidyne generator, which follow and supplement the discussion in the September issue.

The marine engineers should write "The Chief" for an explanation of any terms used in these instruction books not thoroughly understood.

The electric propulsion equipment furnished for each tanker includes the following items:

One Main Turbine-Generator Set

Turbine maximum rating: 5400 kw, 3715 rpm, 10 stages.

Generator maximum rating: 5400 kw, 3715 rpm, 2370 volts, 1.0 power-factor, 3 phase, 62 cycles.

Steam conditions at throttle valve: 435 G, 720 F. total temperature. Suitable for operation at 435 G, 790 F. total temperature.

Vacuum: 28.5 in. at turbine exhaust.

One Main Propulsion Motor

Marine synchronous type: 6000 shp, 90 rpm, 2300 volts, 3 phase, unity power factor. Suitable for maximum continuous duty at 6600 shp, 93 rpm.

One Propulsion - Motor Ventilating - Fan Unit

Motor rating: KF-404, 15 hp, 1200 rpm, 440 volts, 3 phase, 60 cycles, totally enclosed, ball-bearing type, marine.

Fan rating: No. 6, single-width, American Blower fan. The fan delivers 16,000 cu. ft. of air per minute at 1200 rpm.

Two Surface Air Coolers

For turbine generator: Single-section, 2-pass, double-tube cooler with 1670 sq. ft. of cooling surface.

For propulsion motor: Single-section, 2-pass, single-tube cooler with 2350 sq. ft. of cooling surface.

Control Equipment, consisting of:

One control panel mounting instruments, relays, switches, operating levers, interlocking, etc.

One control group containing high-voltage line and field contactors, field resistors, voltage regulator, current and potential transformers, and associated devices.

Voltage Regulators

The two main-propulsion voltage regulators are the static type which depend on the characteristics of electrical-circuit elements for their action. Each regulator operates upon and controls the voltage through the medium of an amplidyne exciter. The amplidyne exciters are constructed so that a very small change in excitation on any one control field will cause a large voltage to be generated in the armature circuit of the amplidyne generator. Any one control field will stand (from a heating standpoint) a continuous current of about ten times that required to cause generation of full output voltage in the amplidyne-generator armature circuit.

The general scheme of operation is to oppose the ampere turns of two control fields. A boost field is excited through a linear circuit to cause the voltage to rise. An opposing bucking field is excited from the voltage when controlled through a reactor which saturates with voltage. Thus, when the controlled voltage is low, the boost field predominates; as the voltage rises, the reactor in series with the bucking-field circuit saturates, causing a rapid rise in the bucking-field ampere turns. Therefore an equilibrium is established between the two fields, leaving just sufficient difference in their ampere turns to excite the amplidyne generator to a value which will cause generation of an ac voltage sufficient to saturate the reactor.

Two arrangements are used; one for the main-propulsion units and one for control of the auxiliary generators.

The two regulator systems are similar in principle but differ in details because of the difference in requirements of the two applications. The instructions in this book apply to the Type GNA4A2 regulators for the main-propulsion motors and generators.

Principle of Operation

The main-propulsion regulator controls voltage as a function of frequency, approximately as shown in Fig. 4. This characteristic is desirable, as approximately constant volts-per-cycle is held at the higher frequencies where the torque is high, and the volts-per-cycle is allowed to decrease at the lower frequencies where fairly low torques are encountered. This allows the field currents of the synchronous generator and motor to decrease at the lower speeds, thus giving more economical operation and less field heating than would be obtained if the volts-per-cycle were held constant at the lower frequencies. At the higher speeds, when the torque is high, the volts-per-cycle is raised to insure high pull-out torque.

Referring to Fig. 6, two complete excitation systems for the main-propulsion generator and motor are used. Only one unit can be used at a time, and a throw-over switch is provided to select the unit to be used. A second switch is provided to allow manual operation for the main exciter or automatic excitation from the regular and amplidyne generator. When on manual control, the main exciter is separately excited from the 125-volt dc bus through a rheostat. When on automatic control, the exciter field is supplied from the amplidyne-generator armature. The amplidyne generator has three control fields: F1-F2, a bucking field; F3-F4, a boosting field; and F7-F8, a combined anti-hunting and boosting field. Assuming that all machines are running and that the main synchronous generator and motor fields are open, but with the transfer switch thrown to unit No. 1, and the exciter on automatic control, the following action takes place:

Field F7-F8 is excited to raise the exciter voltage by only a very small amount, as resistor R2 limits the current to a very small value.

Fields F1-F2 and F3-F4 are excited only very slightly through their rectifiers because only the residual of the ac generator is applied to the potential circuit supplying these fields. If the ac generator field contactor is closed, resistor F2 is short-circuited and field F7-F8 is excited from the 125-volt dc bus; a resistor is connected in series with F7-F8, between the regulator terminals 7 and 8. This causes the amplidyne-generator voltage to rise, the exciter voltage to rise, and the ac generator voltage to rise. Field F3-F4 is excited from the ac potential through a resistor and a rectifier contained in the Type GNA4A2 regulator, causing a further boost to the amplidyne voltage and therefore to the exciter and ac generator voltages. Field F1-F2, which bucks, is likewise excited from the ac potential through a rectifier and a reactor. The boost action predominates until the ac voltage rises to the voltage at which the reactor in the circuit of field F1-F2 saturates. At this voltage, the current in field F1-F2 rises rapidly until the difference between the boost ampere turns of fields F7-F8 and F3-F4 are partially overcome by the bucking ampere turns of field F1-F2, and an equilibrium is established, leaving just enough net boosting ampere turns to excite the machines to produce this voltage. Anti-hunt transformers connected to field F7-F8 transmit currents to field F7-F8, dependent upon the rates of rise of the amplidyne and exciter voltages to prevent overshooting. These currents die away rapidly after a change, and disappear in steady operation.

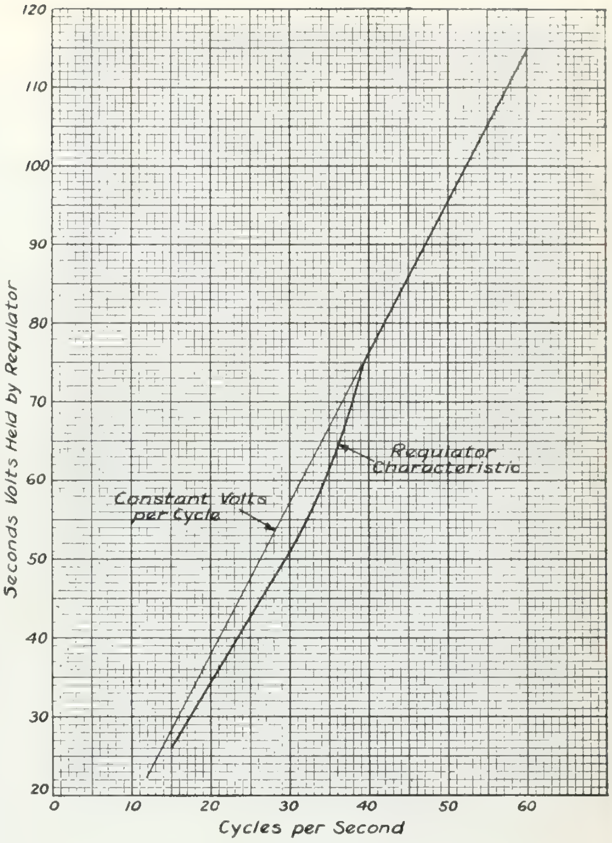
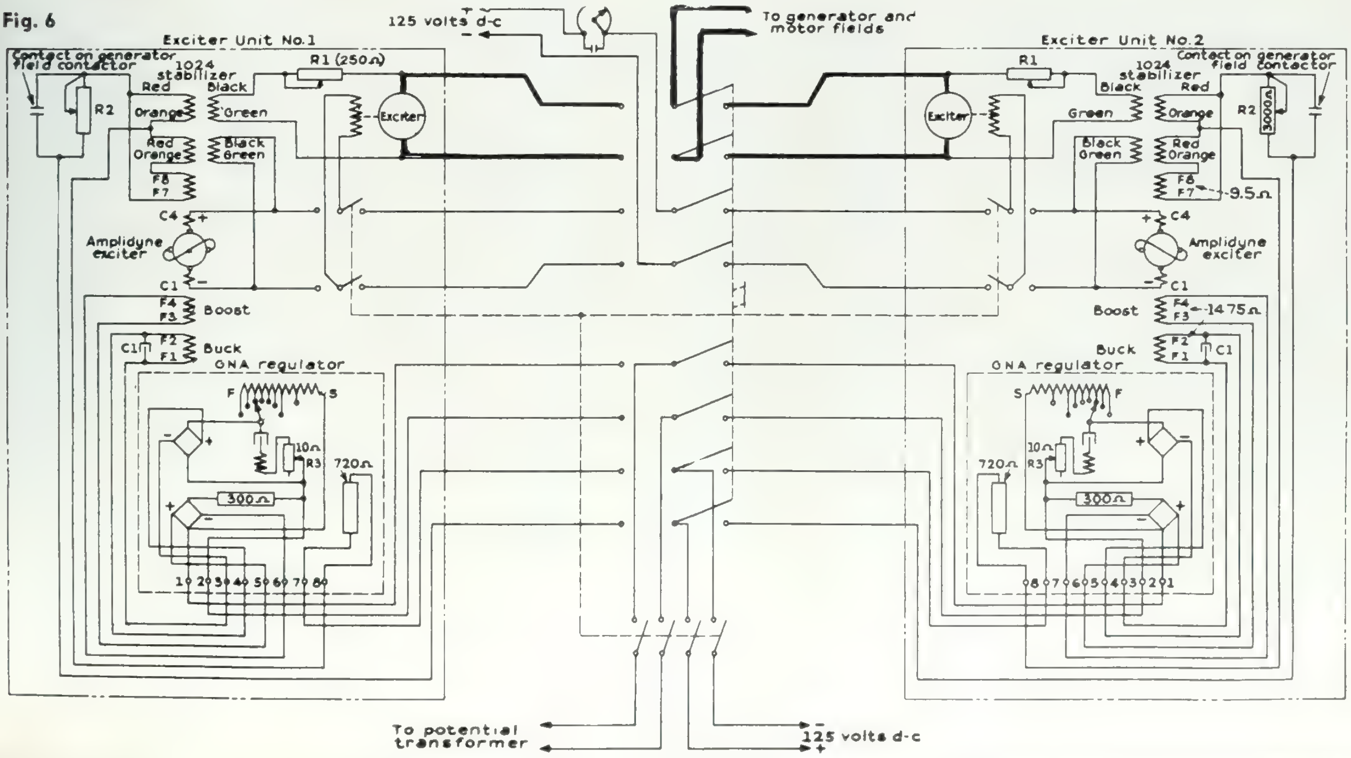


Fig. 4

A tuned circuit, consisting of a capacitor and a linear reactor in series, is connected across the ac side of the rectifier which feeds the field F1-F2 to give the required frequency characteristic. Without this circuit the regulator would hold approximately constant volts-per cycle rather than the characteristic shown in Fig. 4.

Capacitor C1 is connected across field F1-F2 to decrease the peaked voltage wave, which would otherwise be applied because of the saturation of the saturated reactor. The reactor is provided with taps which determine the voltage at which it saturates and the voltage that the equipment will hold at a given frequency.

Fig. 6



News FROM THE PACIFIC NORTHWEST

by R. H. Calkins

Todd Plant Earns a Star

Seattle-Tacoma Shipbuilding Corporation, Seattle Division, October 10 was awarded a star as an addition to the Navy "E" burgee because the big yard is keeping months ahead of schedule on its total contract for destroyers. The award followed the usual reexamination of the company's "E" status. The corporation has two large Seattle plants, A, where the fighting ships are built, and B, where they are outfitted and made ready for service. Employes of Plant B, at a colorful rally October 15, pledged themselves to complete construction of the destroyer Doyle sixty days ahead of schedule.

The rally was held near outfitting wharves where five destroyers are being made ready for service, as the day- and swing-shifts were changing. All of the members of both shifts took part. The rally was initiated by the workers, but had the complete cooperation of the management. **Claude Smith,** representing the labor-management committee of the corporation, was master of ceremonies.

Three Sweepers Launched

The first mine sweepers of a series to be launched by the **Willamette Iron & Steel Corporation,** was sent down the ways October 14. The vessel was christened Candid by Miss Maryanne Miller, whose father, H. M. Miller, is a leaderman, and whose mother is an electrician's helper in the yard.

Puget Sound shipyards added two mine sweepers to the Navy October 17. The YMS 216 was sent down the ways from the **J. M. Martinac Shipbuilding Corporation's** yards at Tacoma, sponsored by Miss Frances Jayne Ellertson. The YMS 271 was launched from the plant of the **Bellingham Marine Railway & Boatbuilding Company** and was christened by Miss Donna Ruth Ershig.

Liberty Name Contest

A contest for the naming of a Liberty ship by school children of the State of Washington is announced by **Pearl A. Wanamaker,** state superintendent of instruction. She requested school children to submit names to her by October 31, and from this list, a committee will select the name for the vessel.

Each school entering the contest must send in the amount of scrap collected for the war effort. From the three schools highest in the amount of scrap metal per pupil, the principal or teacher will select the pupil who has contributed the most to the campaign. These three pupils and their teachers or principals then will have their expenses paid to the launching of a Liberty ship.

W. M. R. & S. Co. Busy on Mine Sweepers

Building steel mine sweepers, the **Winslow Marine Railway & Shipbuilding Company** is operating at top speed. Two of the vessels, the Pursuit and the Requisite, have been launched. Founded in 1903 as the Hall Brothers Shipyards, the plant at Winslow, across the Sound from Seattle is one of the most historic in the Pacific Northwest. Here many widely-known sailing vessels were built before the plant was purchased by James Griffiths & Sons, and renamed the Winslow Marine Railway & Shipbuilding Company in 1916.

Among the vessels built by the present management were the steamship Anyox, which is now owned by the Pacific Salvage Company of Victoria, B. C., and the motor vessel Brown Bear of the United States Fish and Wild Life Service. During the World War I, the Winslow yard installed machinery in Ferris type ships.

Officers of the company are **James Griffiths,** president; **Stanley A. Griffiths,** vice president; **A. W. Copp,** general manager, and **J. D. McMasters,** secretary.

Shipyard Labor Stabilization

Portland shipyard workers are prevented from transferring from one shipyard to another unless given a proper clearance by the first employer, according to a labor stabilization plan which became effective at noon, October 16. The agreement was made at a joint meeting of all employers in the Portland shipbuilding industry and the Portland Metal Trades Council. Acceptance of the plan by the three Kaiser yards, the Willamette Iron & Steel Corporation, Commercial Iron Works, Albina Engine & Machine Works, Gunderson Brothers, and others, was announced by **Austin F.**

Fegel for the employers and **D. E. Nickerson** for the Oregon State Federation of Labor.

WSA Operating Agents

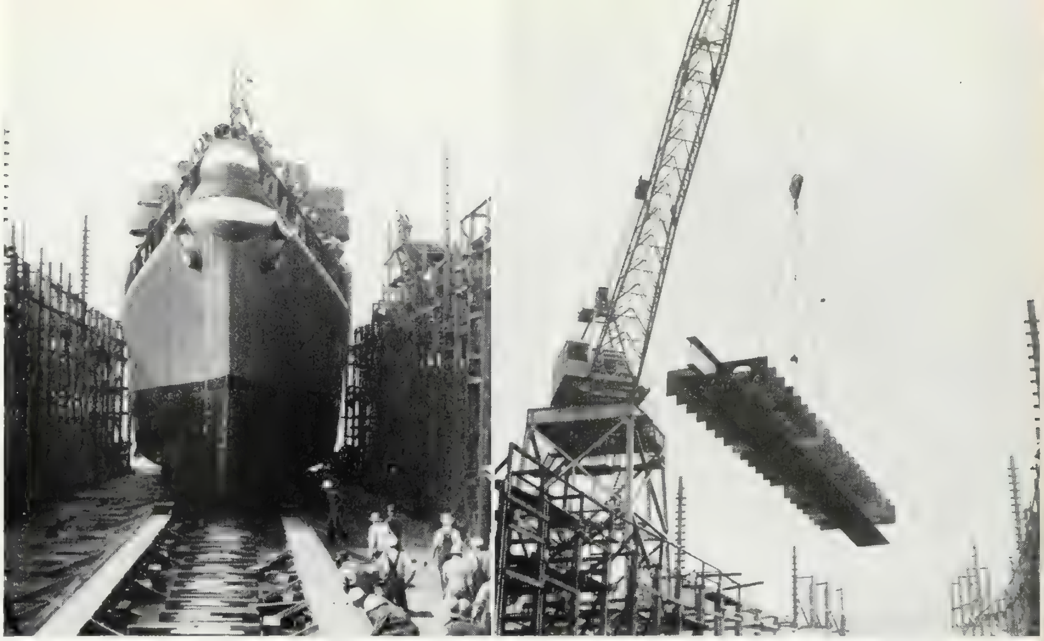
Twenty-six steamship companies operating in the Pacific Northwest have been included among the 62 companies which the War Shipping Administration has designated as operating agents. Of them, 53 are designated as Class A firms to handle Liberty ships, while other firms designated as Class B, will act as agents for foreign flag ships owned by the War Shipping Administration.

Listed among the Class A operators are the American Mail Line, James Griffiths & Sons, Northland Transportation Company, Alaska Steamship Company, Alaska Transportation Company, Pacific-Atlantic Steamship Company, Coastwise Line, Moore-McCormack Lines, Shepard Steamship Company, American-Hawaiian Steamship Company, Calmar Line, W. R. Chamberlin & Co., De La Rama Line, Grace Line, Hammond Line, Isthmian Lines, Luckenbach Lines, McCormick Line, Matson Line, Pacific Coast Direct Line, Sudden & Christenson, Union Sulphur Line, and Weyerhaeuser Line.

The Class B companies include the General Steamship Corporation, Ltd., Norton, Lilly & Co., and the Bulk Carriers Corporation.

Oregonship Launches 84th

Named in honor of the woman pioneer founder of Pacific University, at Forest Grove, Ore., the Liberty ship Tabitha Brown was launched October 16 from the **Oregon Shipbuilding Corporation's** yards. The launching ceremony included an address by **Dr. W. C. Giersbach,** president of the college. **Mrs. Edward H. Lufkin,** wife of a shipyard painter, was the sponsor. Tabitha Brown, a widow, founded a boarding school at West Tualatin, Ore., which later was developed by Presbyterian and Congregational churches into a college. Two descendants of Mrs. Brown are employees of Oregonship. They are **Wendell Brown** of the shipping department, and **Miss Jean Miller** of the expediting department. A quartet of Turkish newspaper men witnessed their first Liberty ship launching as guests of the company. The Tabitha Brown was the 84th vessel launched from the yards of the Oregon Shipbuilding Corporation.



ANOTHER SEAPLANE TENDER goes down the ways at the Lake Washington Shipyards and as soon thereafter another keel is laid on the same way.

Isaacson Wins Two Flags

The Isaacson Iron Works of Seattle is flying two more coveted flags. They are the Maritime Commission "M" Pennant and the Victory Fleet Flag, presented to the plant and workers by **Harry Taylor,** representing the United States Maritime Commission. The flags have been presented to the Issacson company for outstanding achievement in the construction and maintenance of ship equipment of the Victory Fleet.

The presentation was made October 19 at a ceremony attended by Gov. **Arthur B. Langlie** of Washington, and Mayor **William F. Devin** of Seattle. The plant has been flying the Army-Navy "E" for some time, and recently received the Bull's Eye and Minute Man flags after workers had pledged more than 12 per cent of their income in war bonds.

Olympic Barge Builders

The keel for a 274-foot wooden barge was laid October 17 at the yards of **Olympic Shipbuilders, Inc.,** at Port Angeles. At the same time the new firm's four-way plant, which is virtually completed and ready for operation, was dedicated in the presence of **Harry Taylor** of San Francisco, representative of the Maritime Commission.

The barge is the first of eight vessels of the same type that will be built at the Port Angeles plant. The vessels will be constructed with the lines of wooden ships and not as flat vessels. They will be towed by specially constructed tugs in Gulf of Mexico and coastal waters, relieving steel cargo ships for war duty. From twelve to fourteen of the tugs have been ordered for this service. The barges will be capable of carrying 7500 tons of cargo each. They are being constructed for the United States Maritime Commission. Plans for the vessels were prepared by **W. C. Nickum & Sons,** Seattle naval architects.

Officers of Olympic Shipbuilders, Inc., all Seattle men, are Kemper Freeman, president; William Freeman, vice president; Miller Freeman, Jr., treasurer, and Lawrence K. Smith, secretary.

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News FROM THE PACIFIC SOUTHWEST

by K. M. Walker

Spirit of '76

Launchings are so frequent these days that as one reporter expresses it, "As news, they are worth a dime a dozen." Occasionally some outstanding name bestowed on a ship, or some spectacular record in her construction gives a flair to the launching that makes news value. Such has been the case with some of the recent launchings at the big Calship yard on Terminal Island where they have set a pace of three ships launched a week.

Hull No. 76 of the long succession of Liberties coming down the ways of this yard was christened James B. McPherson after a Civil War Brigadier General, but her name was not painted on the bow till after the launching. Instead the numeral 76 in large block letters was painted on at the top of the stern, and in a special ceremony staged by the workmen who built her, a tableaux was presented personifying the famous painting "Spirit of '76" by Archibald M. Willard. Three workmen in costume with drum and fife and a beautiful flag presented the scene as the ship slid down the ways.

A few other recent newsworthy launchings from this yard picked at random from those occurring since our last issue are presented herewith.

Mrs. Richard A. Carrington, wife of the publisher of the Los Angeles Examiner, sponsored the 77th Liberty, S. S. John Sedgwick, on October 7. The ship was named after a noted Indian fighter and soldier.

The 78th Liberty vessel to go down the ways of the California Shipbuilding Corp. was christened S. S. William Lloyd Garrison by Mme. Litvinov, wife of the Soviet Russian Ambassador to the United States, on October 9.

Miss Greer Garson, motion picture star, accompanied by her mother, Mrs. Nina Garson, sponsored the S. S. Smith Thompson, 79th Liberty ship, on October 11. Smith Thompson was Associate Justice of the Supreme Court, after serving a period as Secretary of the Treasury, having been appointed by President Monroe in 1818.

Mrs. Charles W. Paddock, wife of the marine and once "fastest human," sponsored the S. S. Brockholst Livingston, eighty-third Liberty ship to be launched by California Shipbuilding Corporation, on October 21. The ship bears the name of a famous Continental Army soldier.

The steamer launched November 7 produced a record for this yard, being their first Liberty that went into the water less than 30 days after keel laying. In this connection, it should be stated that Calship has never tried for spectacular speed records on any one ship but has tried to develop consistent monthly averages, and in this respect, its overall record is very near "tops" for the United States.

The 29-day keel laying to launching record for Calship was tied on November 11 by the 93rd Liberty launched. This vessel is noteworthy also for her name, being christened Hubert Howe Bancroft for the great Pacific Coast historian and founder of the great Bancroft Library at the University of California.

Liberty No. 100, to be launched in the near future from Calship ways, will be named for the late great president of the University of California, Benjamin Ide Wheeler, and will be sponsored by Mrs. Robert Gordon Sproul, wife of the present president of that great institution.

A New Lens For Welders

A new welding lens for aluminum welders, known as the Burt-Weld Lens, has just been placed on the market after months of exhausting research by Dr. R. C. Burt, scientist, affiliated with the plant engineering department of Lockheed Aircraft, Inc., who recognized the need for a glass that would filter out the blinding glare of the hydrogen torch and burning flux used in the welding of aluminum. After countless experiments, and in cooperation with the Corning Glass Works, he was able to develop a lens which so completely eliminated glare that the first Lockheed foreman who tried it thought his welding torch had gone out, and had to take off his Burt-Weld equipped goggles to convince himself that it was still burning.

Aluminum welders, who for years have been severely handicapped by continued eye strain and fatigue caused by working "blind" with lenses which only partially eliminated glare, now see through the Burt-Weld lens only a pale cone of flame at the tip of the welding torch. The aluminum welding rod, and the working puddle of aluminum, are both clearly visible, and as a consequence production on such famous

Lockheed planes as the "Lightning" P-38 Interceptor has been measurably speeded.

The achievement of stopping glare, while not interfering with vision, came about through spectroscopic analysis of the aluminum welding flame. This analysis indicated which rays were undesirable, and subsequent experiments revealed a combination of light filters which not only eliminated undesirable rays but passed sufficient light of other wave lengths to provide good visibility of the work. From the absorption curve of this filter combination, it was possible to select two glass filters which, combined, gave the desired result.

The Burt-Weld Lens is scientifically ground, polished, and optically perfect. The lens fits any standard welding goggle accommodating a 50 mm. round lens. A bulletin describing the product, and including a discussion on the scientific principle involved, may be obtained by writing B. F. McDonald Co., Los Angeles, Calif.

New Ship Salvage Idea

With the sinking of so many vessels by belligerent nations come many ideas, as during World War I, for the recovery of some of the accessible sunken ships. Some of these ideas are fantastic and impractical, but out of the minds of men with ship salvage experience come some practical and workable ideas. In the latter class is the idea of **Lieut. Harry E. Reisberg,** who is seeking a patent on certain equipment to include a drydock 520 feet in length, and 210 feet wide. This is proposed to be equipped with 30 powerful hoisting machines to lower 16 immense tongs, 300 feet long, and three feet in diameter, with cables 7500 feet in length. The dock is designed to be floated over the grave of a sunken ship, when the tongs would be lowered and forced around the hull to lift it into a 460-foot long well in the drydock where she could be cradled and taken into the nearest port of repair for rebuilding or dismantling.

Lieut. Reisberg is a former chief of the Bureau of Navigation Tonnage and Licensing Division, but has had more recent experience as a salvage expedition director, and has used diving bells and mechanical robots in recovering material, ships and treasure from the sea bottom. He claims his device would cost less than one large freighter and he proposes to build one and with it recover an armada of ships.

Lobster Fishing Disappointing

Following the opening of the lobster season in California on October 1, fishermen have been highly disappointed in the catch so far, and to date only about three tons of the crustaceans have been landed in San Diego. For this reason, the local lobstermen have made no plans for the establishing of lobster camps in Lower California, the first time in many years such camps have not been operated, and on October 15, the opening day in Mexican waters, the camp sites from Point Au Rocks at the mouth of the Tijuana River to Scammons Lagoon south of Ensenada were deserted.

Other San Diego Launchings

On September 30 the **San Diego Marine Construction Company** sent their eighth mine sweeper down the ways. The sponsor was **Mrs. La Vona Coath,** daughter of **J. P. Nielsen,** general foreman of the building company. The principal speaker was **Elwood Bailey,** of the San Diego Convention Bureau, who complimented the plant and the men on their record but called for redoubled effort, saying, "We are fighting for liberty or death and every second counts."

During the past month, the **Lynch Shipbuilding Company** launched two more coastal transports, the fourth and fifth to be built to date by this firm. The first was launched September 16 under the sponsorship of **Mrs. H. E. Reiger,** wife of the eldest employe of the Benson Lumber Company, an affiliate of the Lynch Shipbuilding Company. The invocation was given by **Dr. Roy Campbell,** pastor of the La Mesa Congregational Church, with **Lieut. Commander C. M. Neuner,** resident shipbuilding inspector, as principal speaker.

The second launching at the Lynch plant occurred on October 9, with pretty **Mrs. Fern Dumont,** veteran office employe of the shipyard, as sponsor. **Frank C. Lynch,** president of the company, presided and the **Rev. Thomas Law Coyle,** pastor of the First Presbyterian Church, gave the invocation. **Gerald C. Thomas,** vice president, spoke and said, "The team-play here has been fine indeed, and I know you all are as proud as I am at the job we are doing."

Max Miller in Navy

While the pen may be mightier than the sword, the popular 43-year-old marine writer Max Miller has expressed a preference for the latter weapon over the fountain pen for the purpose of spearing Japs, and has been sworn in as Lieutenant, Senior Grade, at the 11th Naval District headquarters in San Diego.

From 1924 to 1932, Mr. Miller was a waterfront reporter for the San Diego Union and, during these years, gathered the material for his now famous book "I Cover the Waterfront," which came out in 1932 and elevated him to the rank of top-flight writer. Since then he has produced 14 books, including "Harbor of the Sun," "It Must be the Climate," "The Second House from the Corner," "The Man on the Barge" and "He Went Away for a While," all centered in and about San Diego and woven around characters he had met while serving as a marine reporter. His latest book, "The Land Where Time Stands Still," was off the press in October. It deals with the country and people of Lower California.

Naval service is not new to Max Miller as during World War I, he served as a boatswain's mate. His first assignment in the present enlistment will be to active duty somewhere on the East Coast.

ORE CARRIER LEON FRASER IN DETROIT RIVER

Largest . . .

GREAT LAKES ORE CARRIERS

THIS YEAR THE Pittsburgh Steamship Company is adding to its fleet of ore carriers five new steamers, the largest of their type ever built. Three of these vessels, named Leon Fraser, Enders M. Voorhees, and H. H. Ferbert, were built at the Ecorse, Michigan, yard of the Great Lakes Engineering Works. The other two, named Benjamin F. Fairless and Irving S. Olds, were built by the American Shipbuilding Company at their Lorain, Ohio, yard. The principal characteristics of these steamers are set forth in the table herewith.

The new hulls are about 28 feet longer, seven feet more beam, and 2½ feet deeper than the four steamers William A. Irwin, Ralph Watson, John Hulst, and Governor Miller, built for the same owners in 1938, and then the largest ore carriers on the Great Lakes. On the basis of displacement, the new ships are 27½% larger and will carry an additional 3400 tons of ore.

PRINCIPAL CHARACTERISTICS

Length overall	639′ 6″
Length to centerline of rudder stock	622′ 9″
Breadth (molded)	67′ 0″
Depth (molded)	35′ 0″
Designed maximum draft	24′ 0″
Displacement (at 24′ draft)	tons (long) 23,960
Estimated gross tonnage	tons (long) 10,450
Number of cargo holds	3
Cargo hold capacity (self trim)	cu. ft. 625,000
Cargo deadweight (at 24′ draft)	tons (long) 18,600
Shaft horsepower (normal)	4,000
Shaft horsepower (maximum)	4,400
Shaft R.P.M. (normal)	90
Shaft R.P.M. (maximum)	93

The following detailed technical description was compiled from an article describing the Leon Fraser and released by the United States Steel Corporation. It covers in a general way all five vessels and is correct in all details for the three built by the Great Lakes Engineering Works.

The hull design uses a combination longitudinal and transverse system of framing. The framing within the side tanks and at the ends of the vessel is transverse, while for the bottom shell, inner bottom and spar deck, it is longitudinal. A new departure is the use of longitudinal framing on the topsides and on the upper side tanks.

As in previous vessels, the side tanks are extended to the spar deck, thus adding to the longitudinal strength of the vessel and forming an enclosed passageway on the main deck from the forward to the aft end. By the use of longitudinal framing in this passage and an improved design of web frames, the walking area is kept perfectly clear. In the former ships, it was necessary to step over a high sill every twelve feet at the webs.

Welding is used to a much larger extent in the new ship than in any preceding Lake freighters. As was the case previously, the inner bottom and side tanks are all flush welded, together with the machinery foundations. In addition, the shell butts are flush welded as are all of the decks. A notable improvement in design is the use of a single spar deck stringer strake with flush welded butts, and the elimination of the usual heavy gunwale angle by the substitution of another flush weld. The stringer plates are 24′ long by 11½′ wide by 1.4″ thick, each weighing 15,732 pounds.

Welding is used in the fabrication of the vessel, which is a new procedure in the construction of Lake vessels, and is used on all horizontal flush seams and butts. The Unionmelt syste m of automatic welding was largely used in this work. This method makes possible perfect welds, made with a single pass.

There are eighteen cargo hatches spaced at 24′ 0″ centers. Each hatch has a clear opening of 11′ by 43′ and is enclosed by a 24″ coaming. After successful use on previous Pittsburgh vessels, this type hatch covers was adopted. They consist of a single piece steel cover made watertight with flax gaskets and clamps, without the necessity of canvas tarpaulins. These covers, which weigh about 12,500 pounds, are handled by a traveling crane which spans the hatch openings. The crane is electrically operated and runs on rails located on either side of the hatch openings. Thus it is possible to raise the covers from the coamings and stow them on deck between the hatches.

Accommodations are located in the aft deck house, the texas house forward, the forecastle and on the main deck forward. The aft deck house contains: the commissary spaces, such as the galley, pantry, refrigerator, mess room and officers' dining room; the chief engineer's office and stateroom; and quarters for assistant engineers, oilers, coal passers, firemen, stewards and porters. In addition there is one spare room and a recreation room. All rooms have private baths, except the firemen and coal passers' rooms, which share a common bath.

The texas house contains an observation room, the captain's office and stateroom and two owner's staterooms. Each stateroom is provided with a private bath.

All of the living spaces are insulated and ceiled with fireproof materials. All inside doors are of the hollow metal type, thus making the vessel entirely fireproof.

Power Plant

The coal bunker is located between the engine and boiler rooms and is hoppered in such a way that the coal will flow freely to the coal conveyors.

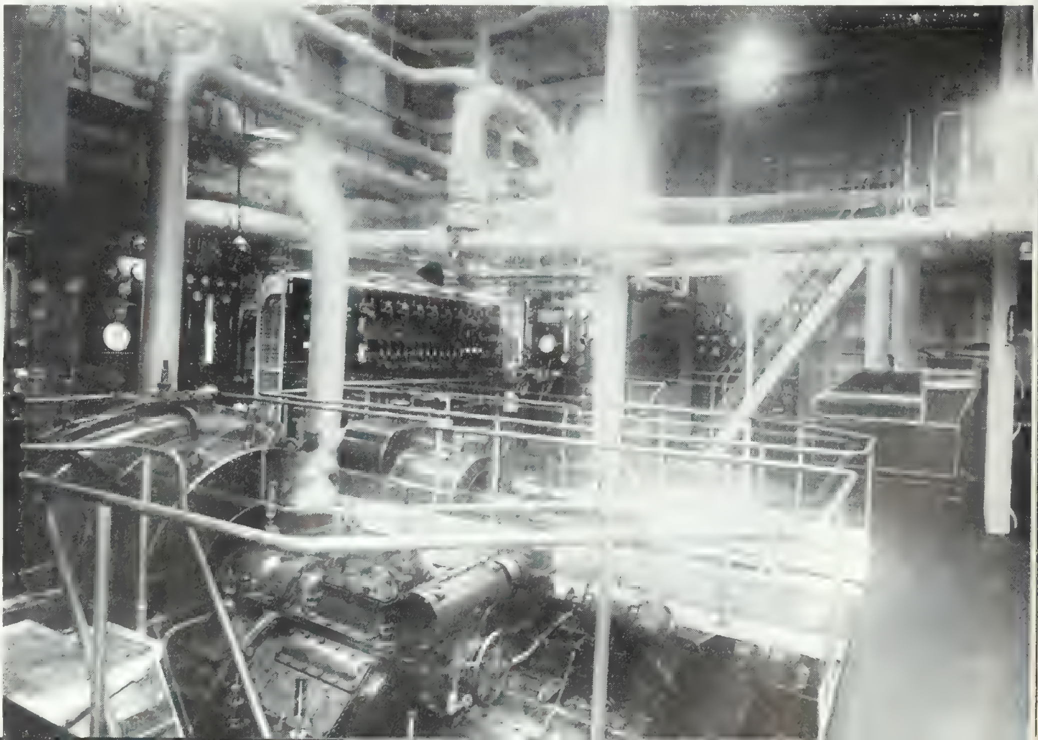
Steam is supplied by two marine type, cross drum, sectional header water tube boilers with water side walls. The pressure at the turbine inlet is 400 lbs. per square inch, and the total steam temperature is 750° F. Each boiler is designed for a working pressure of 450 lbs. per square inch, and to evaporate at normal rating, 18,500 lbs. of water per hour with a maximum of 25,000 lbs. per hour. The boilers are fitted with superheaters, de-superheaters and air heaters.

Coal is supplied to the boilers by stokers designed to supply about 1950 lbs. of coal per hour at normal rating and 2700 lbs. maximum to each boiler. The stoker equipment includes the forced draft fans.

Fully automatic combustion control is provided.

Coal is transferred from the bunker openings to the stoker hoppers by means of all-around coal conveyor of six tons per hour capacity.

The power selected for the new vessels is similar to that pioneered on the Great Lakes in the previous Pittsburgh Steamship Co. freighters, i.e. — DeLaval cross compound, double-reduction-geared turbines. The turbines consist of a high pressure, and a low pressure turbine geared to a single



ENGINE ROOM of ore carrier A. H. Ferber, featuring De Laval turbine.

shaft. The reversing turbine is located at the exhaust end of the low pressure casing and is designed to deliver 50% of the ahead torque. Although the normal power is 4000 shp, these turbines are so designed that the efficiency will not fall appreciably at 3500 shp, at which point it is sometimes necessary to operate the vessel. Assuming a fuel consumption of 0.86 pounds of coal per shp per hour, the daily consumption would be about 41.3 tons. This represents an increase of about 30% in economy as compared with the best reciprocating engine practice on the Lakes.

The main condenser is a marine surface condenser of horizontal, two-pass, deaerating type, with about 4000 square feet of cooling surface. The condenser is mounted on spring supports to avoid stresses on the turbine casing due to thermal expansion. A vacuum of 28½″ referred to a 30″ barometer can be maintained when condensing 30,000 lbs. of steam per hour, and when supplied with 6100 gallons of circulating water per minute at 75° F.

Two turbo generators are installed, each of 325 kw capacity. The generators are compound 240-volt, two-wire direct current marine impregnated type. The turbines are direct connected through flexible couplings and operate on steam furnished at 400 lbs. pressure and 750° F., exhausting into a 28¼″ vacuum.

Following recent practice, the propeller installed is a solid bronze wheel 17′ 6″ in diameter, with a pitch varying from 9.0′ at the hub to 16′ 4.25″ at the blade tips. The blade sections are of the air foil type to give maximum efficiency. Model tests indicate that, when operating at 4000 shp, 90 rpm, 14 mph at 24′ draft, a propulsion efficiency of 0.663 will be realized.

Special Steels

In keeping with her trade and ownership, stainless steel trim and equipment has replaced most of the brass and bronze usually found aboard ship. The galley sinks, tables, shelving, etc. are all fabricated of stainless steel. The refrigerator lining, door kick plates, hardware, cooking utensils, etc. are all stainless steel.

In addition to the regular hull steel, about 335 tons of Man-ten steel was used to line the cargo hold, both on the inner bottom and side tanks. The coal bunker plates are all Cor-ten steel. The Man-ten steel was used to better resist the shock loads imposed by the unloading equipment and represents a saving of about 45 tons over the equivalent weight, if mild steel were used. Cor-ten steel in the coal bunker better resists the corrosive action of the fuel. All of these steels were supplied by the Carnegie-Illinois Steel Corp., also a U. S. Steel subsidiary.

STEADY AS YOU GO!

(Continued from Page 91)

steamer is about 2½ times the net tonnage. However, in passenger vessels, with many major spaces given over to staterooms and saloons, the deadweight will vary within wide limits in relation to the net tonnage.

The calculating of volume of space on a vessel is called **admeasurement** and is performed by specialists known as **admeasurers.**

All details may be found in the **Rules for Tonnage Measurement,** issued by the Department of Commerce.

QUESTION

Is there a separate set of rules governing the tonnage classification of vessels for transit through the Suez and Panama Canals?

ANSWER

Yes, there is a different method used by the Canal authorities. The differences are in the matters of detail, and concern exempted and deducted spaces. Any vessel expecting to transit either the Suez or the Panama Canal must have tonnage certificates prepared in accordance with instructions of the respective canal authorities. These certificates can be prepared by customs officers of the United States for ships of United States registry on the application of the owners.

QUESTION

Is the tonnage certificate of a United States merchant vessel accepted at face value in other countries of the world? Does the United States accept the tonnage certificate of foreign vessels at its face value?

ANSWER

Yes, there is practically a reciprocal acceptance of tonnage certificates; this was brought about by securing agreement in the methods of measurement and computation and the requirements for exempting and deducting compartments. This is a matter of great convenience to ship operators and owners.

QUESTION

What is the origin of the words "ton" and "tonnage" as applied to ships?

ANSWER

Originally the word was **"tun,"** which was a cask of wine, the capacity of which was 252 gallons.

It is believed that the term **tonnage** probably came into use in connection with the levying of dues on wine-carrying ships of the middle ages. The dues being based on the number of tuns of wine the vessel could carry. This afforded a convenient, but hardly accurate, method of rating the size of a vessel.

It is said that the weight of a tun of wine of 252 gallons was about 2240 lbs.; the gallon measure then in use differed somewhat from the present imperial gallon. The tun, while originally a measure of internal capacity, became also one of deadweight capacity and a unit of weight. With the passing of time, the word **tunnage** became **tonnage** as we use it today.

In some of the older papers, we find the term, **tons burden,** or even **tons burthen.** This was the same as the present deadweight tonnage of modern vessels. For instance, in the old days, if it was desired to express the carrying capacity of a vessel, it was expressed as so many **tons burden.**

Keep Posted!

NEW EQUIPMENT AND MACHINERY *for...* YARD SHIP and DOCK

Manufacturing...

BRONZE VALVES ON THE PACIFIC COAST

by Elmer K. Ross

Manager of Sales
M. Greenberg's Sons

IT TOOK 86 YEARS to build a business, which, in 1940, was the largest of its kind on the Pacific Coast, manufacturing "anything in brass or bronze," from fire hydrants to shower doors. It took only a matter of months to convert this diversified manufacturing plant over to brass and bronze valves, flanged fittings, flanges and fire hydrants, needed desperately by our Navy, the Maritime Commission, and the U. S. Army Engineers.

This increased production and change over to 100 per cent war production has meant many changes and innovations to regular procedures. First, the Engineering Department had to be expanded. Here, the valves, fittings, and specialties are designed to meet the rigid Federal specifications.

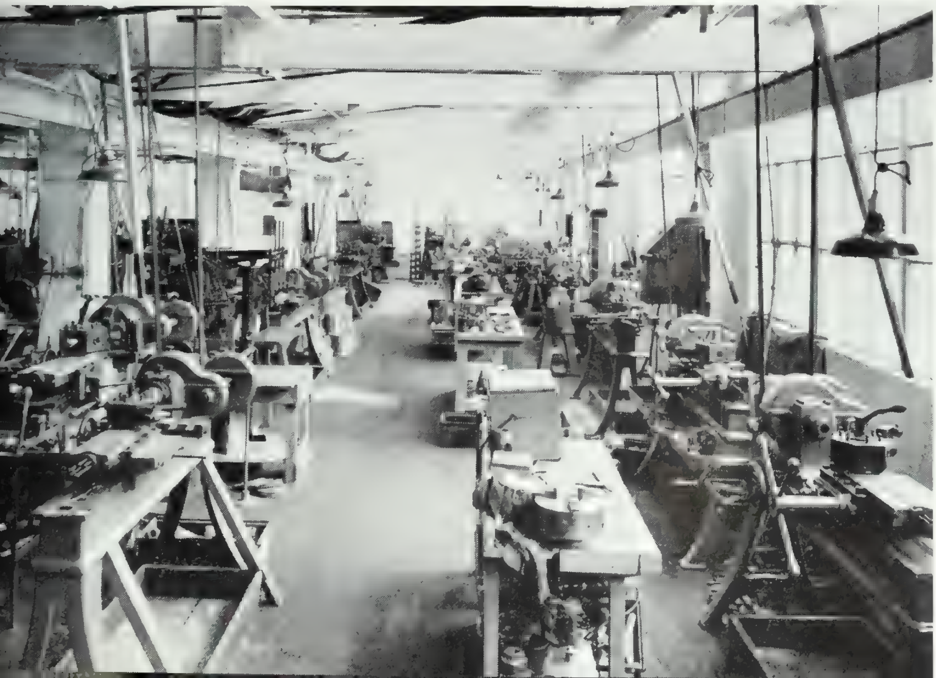
Having a very complete pattern shop helped, and today that shop, one of the best in the Bay Area, is kept very busy: converting single patterns to multiple patterns for speedy mass production; making new patterns for special products; and keeping stock patterns in good repair.

Good valves built up to a standard, and not down to a price, start with the foundry and foundry practice. Here, strict control from the core-making and molding procedure to the final pouring of the proper mixture of metal minimizes lost man hours by assuring perfect castings.

The materials entering the cores used in the Greenberg foundry come from the four corners of these United States, and careful supervision is necessary, as each type of core is made to a definite mix. The molding procedure is carefully supervised by competent foremen, as all their casting is done at high temperatures—2100° to 2150° F. The "skim gate" method of pouring at this high temperature, along with comparatively large tapered risers, insures clean homogeneous, sound castings.

This care in the foundry gives better than standard quality, and results in speedier work and little lost time in the machine shop, as the castings move on from the cleaning room. All valves and valve parts are sand-blasted to remove all core and molding sand. Small parts go through the sand-blast barrel; larger castings through the sand-blast cabinet.

As high as seven different metal mixtures are handled in a day's run through the seven furnaces that have a combined capacity of



GREENBERG MACHINE SHOP

OIL AND GAS fired furnaces and part of Brass Foundry Floor. Rough Castings in foreground.

STOCK CORE room and main foundry floor.

FIRE HYDRANTS showing the boring and threading of outlet in direct alignment with stem-guide and sleeve.

10,000 pounds per pour. Four oil-fired furnaces can handle 7000 pounds per pour, and three gas-fired crucible-type furnaces can handle 3000 pounds per pour. From these furnaces, under strict foundry control, come various Government metal compositions, from Navy hydraulic bronze to "G" metal, which go into the many valves and fittings that make our modern Navy and Maritime ships function.

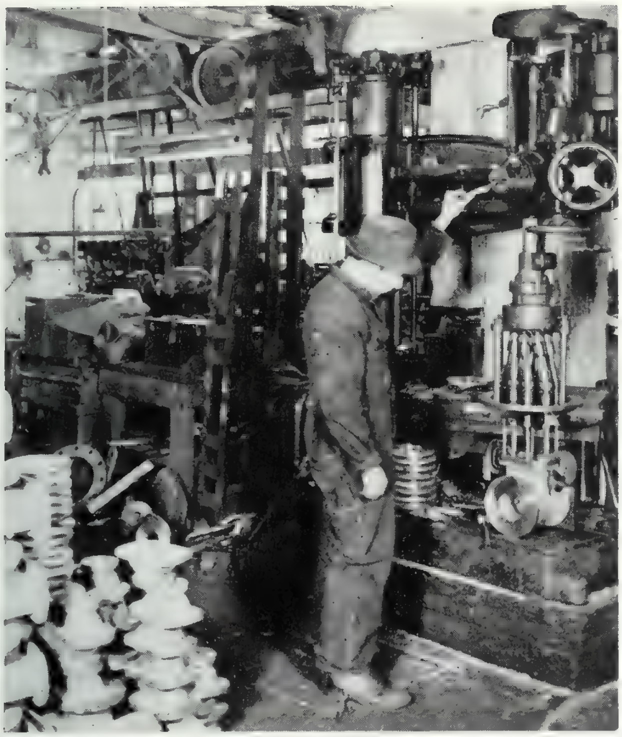
As sales increased and tonnage in the foundry stepped up, manufacturing problems in the machine shop multiplied. New, and better or different tools, dies, and jigs, were needed. They could not be purchased, so tool and die-making facilities had to be expanded in order that machines and manpower could keep ahead of foundry output.

More shop equipment was secured. At the present time, two outside shops have been taken over and are run as definite units of the organization. Work that is beyond present capacity is farmed out to the many job shops operating in San Francisco.

As the various parts were manufactured and assembled, they had to be tested, so modern and additional testing equipment was installed. Automatically, the test pressure is maintained whether it be one pound or one thousand pounds. This care and precision means less grief for those making the final installation.

The tremendous increase in business, and the many manufacturing and production problems that arose therefrom, called for a closer working together of management and labor. Every Monday afternoon at four o'clock, those interested meet and go over the weekly problems, all to the one purpose of making more valves, better and faster.

While this rapid expansion is just another industrial miracle of conversion from peace-time manufacturing to wartime needs, the trade has been kept advised of progress, and practically every large city from San Diego to Seat-



MULTIPLE DRILL, of Greenberg design and manufacture, drilling rectangular-shaped gate valve body flange.

NAVY GLOBE VALVES in process of manufacture.

tle has one valve and fitting jobber, for whom M. Greenberg's Sons is a main source of supply.

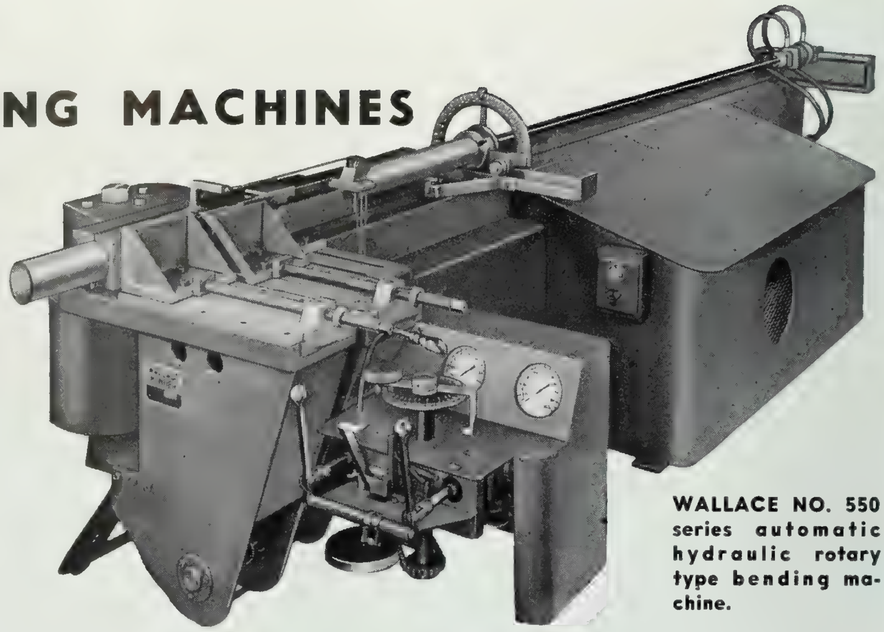
Being located in San Francisco, deliveries can be made within one to two days after the products come off the test block, whether they go to San Diego, Los Angeles, Seattle, Portland, Tacoma, Vancouver, Mare Island or Bremerton Navy Yards or the local shipyards.

Although most shipments are wanted within sixty days, a healthy backlog has been built up for bronze globe, angle, check, and gate valves, and fittings, wanted in periods of time stretched over the next six months. This expanded line of Greenberg bronze valves, flanges, fittings, and marine specialties, have been approved and tested. With the aid of sales engineers up and down the Coast, Greenberg has helped solve many shipbuilders' problems, and made it possible for more ships to be launched as scheduled.

The organization has welcomed this opportunity to be of service to the country and the trade, and appreciates the reception given its products.

PARTIAL SHIPMENT of all bronze Navy gate valves with indicator.

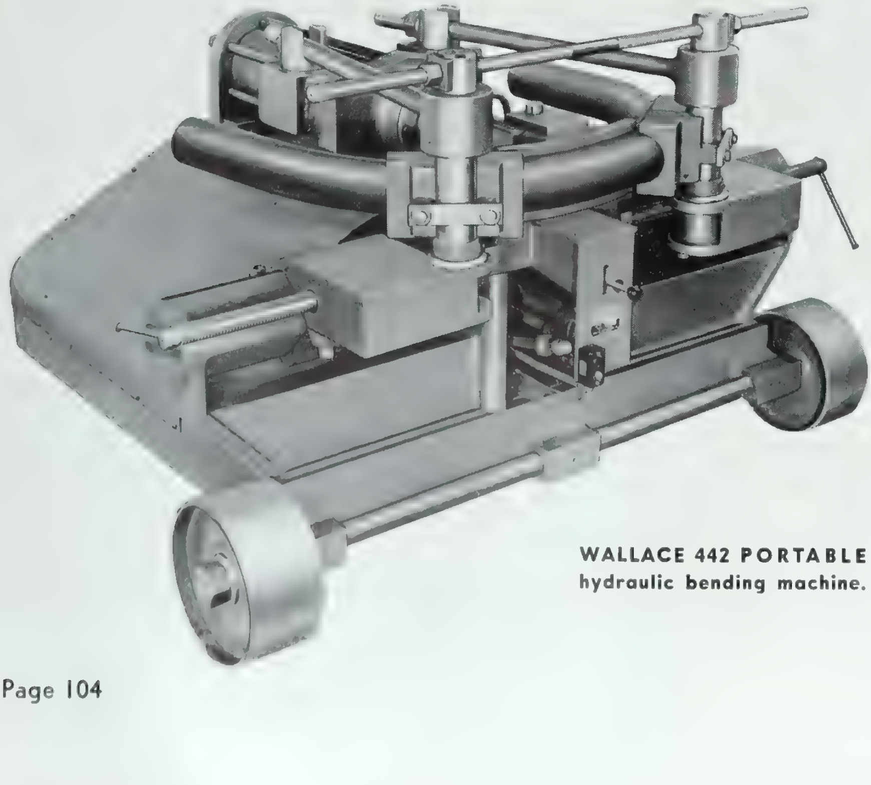
Hydraulic
BENDING MACHINES


WALLACE NO. 550 series automatic hydraulic rotary type bending machine.

WALLACE SUPPLIES Mfg. Co. of Chicago, Ill., have been bending specialists since 1900. The Wallace rotary type hydraulic bending machines are the developed result of these 42 years of accumulated experience.

As will be noted in the illustration, this machine has a modern streamlined appearance and has its controls centered in two small levers. The mechanism comprises a horizontal hydraulic cylinder, piston, piston rod, and connecting rod driving a vertical crank shaft. At its top, this shaft is keyed to a heavy steel table arranged to support and actuate a clamp die and a bending die. Mounted on the stationary frame of the machine and directly along side the clamp die at its starting position is a pressure die. It is obvious that a rotary movement of the pipe bending die with the end of pipe securely clamped thereto will draw the pipe into a curve exactly following the curve of the bending die. A single lever movement controls the bending operation in the following sequence: the forward movement of the mandrel to its predetermined setting; the hydraulic movement of the pressure die to contact with pipe at predetermined pressure; the hydraulic movement of the clamp die with adequate pressure to insure positive clamping action; and the rotary movement of the bending die and clamp die from starting point to the predetermined angle bend.

The single movement of the lever starts this sequence and it continues automatically until the desired bend is complete.


WALLACE 442 PORTABLE hydraulic bending machine.

A slight movement of a reverse lever withdraws the mandrel, loosens the clamp die and returns the head with its bending die to the starting point. This return movement is at twice the speed of the bending movement.

Special tooling is available for these machines to produce almost any combinations of bends in any ductile metal and in any shape, such as tube, pipe, rod, bar, structural shape, extrusions and rolled shape, within the limits of the capacity of the size bender in use.

The Wallace machines are built in sizes up to a capacity for steel tubing of 6¾ inch diameter, with a wall thickness of 0.118 inches.

All bearings are ball or roller of the lifetime sealed type. Hydraulic cylinders are of special Wallace construction, with forged steel bodies, alloy steel tie rods, rolled steel heads and bronze bushings with Chevron type packing. The piston ring is of the automotive type made of nickel-chrome high tensile iron.

These cylinders are designed for a working pressure of 1000 to 1500 psi and are tested at 2000 psi. A special type of hydraulic hose is used where flexible connections are necessary. This hose will stand 5000 psi in the smaller sizes, and the largest size used tests at 2500 psi.

(Page 140, please)

On the Ways—

SHIPS IN THE MAKING

Four Ships a Day By January

At the annual meeting of the institute of Marine Underwriters in New York City, Rear Admiral Howard L. Vickery, vice chairman U.S.M.C., stated that American shipyards delivered a ship every eight hours in September. Surpassing all expectations, up to now, American shipyards are expected to deliver four ships a day by January, 1943, according to Admiral Vickery.

The 8,000,000-ton goal for 1942, he further stated, is now assured, and next year he expects the production to be double that of this year.

Last British Vessels Launched by Todd

The last three 10,000-ton cargo carriers to be built for the British Government by the **Todd-Bath Iron Shipbuilding Corp.,** South Portland, Maine, affiliate of the Todd Shipyards Corporation, was launched October 18.

The vessels, named Ocean Crusader, Ocean Gypsy, and Ocean Glory, were sponsored respectively by Mrs. Ralph A. Leavitt, wife of Lloyd's agent in Portland, Me.; Mrs. William S. Newell, wife of the president of the yard; and Mrs. William Bennett, wife of Lloyd's principal surveyor in New York.

The ships were built in sunken basins, the first time the idea was ever applied to mass production of ships anywhere in the world. When completed, they will mark fulfillment of an order of 30 ships for Great Britain.

SEPTEMBER LIST OF DELIVERIES

SHIPYARD	NO. OF VESSELS	TYPE OF VESSEL
American Ship Building Company Cleveland, Ohio	1	Ore Carrier
Alabama Dry Dock & Shipbuilding Company Mobile, Alabama	2	Liberty
Bethlehem-Fairfield Shipyard, Inc. Baltimore, Maryland	12	Liberty
Bethlehem-Sparrows Point Shipyard, Inc. Sparrows Point, Maryland	1	Passenger & Cargo
	2	Tankers
California Shipbuilding Corporation Wilmington, California	12	Liberty
Delta Shipbuilding Company, Inc. New Orleans, Louisiana	5	Liberty
Federal Shipbuilding & Dry Dock Co. Kearny, New Jersey	2	C-2
Houston Shipbuilding Corporation Houston, Texas	5	Liberty
Ingalls Shipbuilding Corporation Pascagoula, Mississippi	1	C-3
Moore Dry Dock Company Oakland, California	1	C-2
North Carolina Shipbuilding Company Wilmington, North Carolina	5	Liberty
Oregon Shipbuilding Corporation Portland, Oregon	11	Liberty
Pennsylvania Shipyards, Inc. Beaumont, Texas	2	C-1
Pusey and Jones Corporation Wilmington, Delaware	1	C-1
Richmond Shipyard No. 1 Richmond, California	6	Liberty
Richmond Shipyard No. 2 Richmond, California	8	Liberty
South Portland Shipbuilding Corp. South Portland, Maine	1	Liberty
Sun Shipbuilding and Dry Dock Company Chester, Pennsylvania	1 5	C-2 Tankers
Todd-Bath Iron Shipbuilding Corp. South Portland, Maine	7	British
Western Pipe and Steel Company San Francisco, California	2	C-3
Total	93	

After the launching, work will begin in the empty basins on keel layings for Liberty ships, four of which are already under construction in the yard.

"M" Awards to Western Yards

On October 24 the U. S. Maritime Commission announced that additional gold stars would be added to the "M" Pennants of three Pacific Coast shipyards and the "M" Pennant awarded to the Security Engineering Co., Whittier, Calif.

The yards which will soon get their additional stars are: Richmond Number One, second; Richmond Number Two, second; Oregon Shipbuilding Corp., fifth.

WITH A GREAT SPLASH OF CHAMPAGNE, Mrs. Ray L. Hamilton, wife of Marinship's production manager (upper left), on October 16 christens the S.S. William T. Coleman, second Liberty ship to slide down Marinship ways, while Mr. Hamilton beams approvingly. William T. Coleman (upper right) rides gracefully in Richardson Bay. Lower left: The official launching party included, left to right: Ray L. Hamilton, Marinship production manager; Mrs. James Roantree, matron of honor and mother of the sponsor; Lieut. R. M. Dorman, Marinship's superintendent of recruitment and training, making his final appearance before entering active service with the Navy; Lieut. Joseph M. Coakley, Chaplain, California State Guard; Mrs. Ray L. Hamilton, sponsor; William E. Waste, Marinship general manager and master of ceremonies; S. D. Bechtel, president of W. A. Bechtel Co., and K. K. Bechtel, vice president in charge of the Marinship plant. Lower right: The S.S. William T. Coleman starts down the ways.

93 Wooden Barge Bidders

Ninety-three contractors in 21 states entered bids for construction of knocked-down wooden barges. Bids were opened and tabulated by the Maritime Commission on October 22. California contractors led the offerings with 11 bids, Oregon had 8 bidders and Washington 3. Bidders were instructed to bid on not less than 30 barges and not more than 50, unassembled at any shipping point in the U. S. A. The vessels are to be 78 feet in length. Bids ranged from $8,700 to $49,700 per barge.

Bids under $10,000 came from: Defense Construction Inc., San Francisco, $9,674; Remonte Mfg. Co., Corpus Christi, Texas, $8,669.49; W. G. Lalley, Monroe, La., $9,780; and Eastern Shore Industries, Cambridge, Maryland, $9,888.42. The lowest bid from an Oregon builder was $13,711, V. D. Reverman, Portland. Washington State's lowest bidder was George Babare, Tacoma, with $16,430.

New Tanker for Standard of Cal.

The largest ship ever built for Standard Oil Company of California — tanker J. H. Tuttle — was launched late in October at the Sun Shipbuilding & Drydock Company's yards at Chester, Pennsylvania, and will go into active service in February.

Mr. J. H. Tuttle, for whom the vessel was named, was present when Mrs. Tuttle christened the ship in traditional manner. The tanker bears a name long identified with the petroleum industry of the nation. Mr. Tuttle has served Standard of California in various capacities for many years and is now vice president and treasurer on its board of directors.

Navy Launchings

On October 12, the Wilmington Boat Works put another subchaser down the ways, ahead of schedule. She was sponsored by Mrs. Evelyn Maars, secretary at the yard, who was chosen by yard worker Willis La Clair, lucky ticket holder for choosing the sponsor for this fighting craft.

On October 13, two destroyers, the U.S.S. Philip and the U.S.S. Renshaw, designed to defend the new world that Christopher Columbus discovered 450 years ago, were launched in the shipyard of the **Federal Shipbuilding and Dry Dock Company,** U. S. Steel Subsidiary.

Mrs. Barrett Philip, of the Naval Training Station, Sampson, New York, christened the destroyer Philip, the first ship to hit the water, in honor of her father-in-law, the later Rear Admiral John Woodward Philip, U.S.N. Miss Dorothy Lillian Renshaw, of Mamaroneck, New York, named the destroyer Renshaw in honor of her great-great-granduncle, the late Commander William B. Renshaw, U.S.N.

On October 22, named in honor of the late Lieutenant-Commander James Trathen, U.S.N., the destroyer U.S.S. Trathen slid down the ways of the **Bethlehem Shipbuilding Co.,** San Francisco, and was sponsored by Mrs. Cassin Young, Coronado, California. Mrs. Young is the wife of Captain Cassin Young, U.S.N., commanding officer of the U.S.S. Vestal.

On October 23 U.S.S. Oakland, latest sizable American warship slated to join our all-ocean Navy, slid down the ways at **San Francisco's Bethlehem yard.** The new cruiser, named for the California city, was sponsored by Dr. Aurelia Henry Reinhardt, President of Mills College, nationally famous educator, and one of Oakland's leading citizens.

Swan Island Launches Huge Vessel

An airport and a public park last March, Swan Island on the Willamette River in Portland, Oregon, was the scene on October 24, seven months later, of the launching of the S. S. Schenectady, the largest merchant ship ever constructed in the Pacific Northwest. The first ship to be constructed at the new Kaiser yard on Swan Island, the S. S. Schenectady is 21,670 tons.

On October 24, the U. S. destroyer U.S.S. Daly was launched at the **Staten Island Yard of the Bethlehem Steel Company, Inc.** She was sponsored by Mrs. Arthur Ransweiler, Glendale, N. Y., a niece of the late Sergeant Major Daniel Daly of the U. S. Marine Corps, for whom the vessel was named.

Two More Coasters

In a double launching ceremony two cargo vessels—the Benjamin Tay and Charles Treadwell—were floated into the waters of the Oakland Estuary on November 7 from Pacific Bridge Company Yard No. 1 in Alameda. Built in a graving dock for the Maritime Commission, the ships were christened in mid-air from a platform suspended from a huge gantry crane.

The sponsors of the two boats were Mrs. Ethel M. Anderson, daughter of Charles Burgess, day hull superintendent, and Miss Betty Jean Thompson, daughter of Bob Thompson, welding superintendent. The attendants to the sponsors were Mrs. Mary Steward and Mrs. Ellen Rutherford, employees of the Pacific Bridge Company.

Tanker Sparrows Point Honors Worker Scrap Drive

In recognition of a successful scrap salvage campaign and an outstanding record for participation in the War Bond Drive, a new tanker, launched at the **Bethlehem - Sparrows Point Shipyard, Inc.** on October 17, was named the Sparrows Point, the Maritime Commission announced.

The workers of the Bethlehem-Sparrows Point yard, during a month and a half campaign, salvaged more than 3000 tons of scrap, the equivalent of the amount needed to construct a new vessel. Meanwhile, the yard participated in the War Bond Drive, their percentage being 99.7, for which they are receiving a Treasury Department award. The bonds purchased are equal to the cost of a tanker.

In order to pay tribute to the patriotic efforts of the workers, the Maritime Commission approved the recommendation of Rear Admiral H. L. Vickery, Vice Chairman of the Commission, that the new vessel be named the Sparrows Point.

The 16,000-ton tanker was sponsored by Miss Marion Smith, a nurse, and the oldest employee of the Bethlehem - Sparrows Point yard.

Scrap was salvaged from every part of the yard. Workers dug up old rails, demolished a defunct crane and uncovered obsolete machinery. The scrap, if properly converted, would be sufficient to build a tanker. The workers erected a large diagram of a tanker to indicate the progress of the campaign. Each day as scrap was accumulated new areas of the diagram were filled in.

Reduction in Liberty Production Time

American shipyards are not only turning out an increasing number of Liberty ships each month but are building them in a shorter time, the Maritime Commission announced on October 14.

The records for each Liberty shipyard reveal that during September the shipyards, in setting a new production record, made a substantial reduction in the time required from keel laying to delivery. During the month, which saw all ship construction records broken, 67 Liberty ships, a new monthly high for this type of vessel, were delivered into service in an average time of 70.1 days from start to finish. This is a reduction of more than 13 days over the previous month when 57 Liberty ships were completed in the average of 83.3 days.

It was estimated when original contracts for these vessels were let that 105 days would be required to construct a Liberty ship. Eight out of 10 yards now producing Liberty ships are under that figure while the other two are approaching it. The national monthly average for Liberty ship construction has been consistently reduced each month since January when the average time was 241.3 days.

The Oregon Shipbuilding Corporation, Portland, Oregon, continued to set the pace for American shipbuilders in September by delivering 11 ships in the average of 42 days. California Shipbuilding Corporation, Wilmington, California, ran second with 12 ships delivered in an average of 55.9 days. Bethlehem - Fairfield Shipyard, Inc., Baltimore, Maryland, was a close third by delivering 12 vessels in 56.4 days.

SEPTEMBER LIBERTY PRODUCTION RECORD

Rank	Yard	Management	No. of Ships	Average No. of days Keel to Delivery
1	Oregon Shipbuilding Corporation Portland, Oregon	Kaiser	11	42.0
2	California Shipbuilding Corp. Wilmington, California	McCone-Bechtel	12	55.9
3	Bethlehem-Fairfield Shipyard, Inc. Baltimore, Maryland	Bethlehem	12	56.4
4	Permanente Metals Corp. Richmond Yard No. 2 Richmond, California	Kaiser	8	57.6
5	North Carolina Shipbuilding Co. Wilmington, North Carolina	Newport News	5	76.6
6	Permanente Metals Corp. Richmond Yard No. 1 Richmond, California	Kaiser	6	92.0
7	Houston Shipbuilding Corp. Houston, Texas	Todd	5	95.0
8	Alabama D. D. & Shipbuilding Co. Mobile, Alabama	Alabama DD	2	97.5
9	Delta Shipbuilding Company, Inc. New Orleans, Louisiana	American Shipbuilding	5	125.0
10	South Portland Shipbuilding Corp. South Portland, Maine	Todd-Bath	1	198.0

MARINE DEPARTMENT
AETNA INSURANCE CO.
QUEEN INSURANCE CO.
MARITIME INSURANCE CO., LTD.
FIDELITY PHENIX FIRE INS. CO.
Commercial Hull Dept.
AUTOMOBILE INS. CO.

MATHEWS & LIVINGSTON
MARINE UNDERWRITERS
200 BUSH STREET . . . . . SAN FRANCISCO
Offices at: Colman Bldg., Seattle • 111 West 7th St., Los Angeles

NECROLOGY

(Continued from page 87)

was in the party that surveyed the Philippine Islands shortly after the close of the Spanish American War. In World War I, he served in the Navy with the rank of lieutenant.

In 1922 he joined the Dollar Lines at the start of the "Round the World" service, and soon rose to the position of marine superintendent, passing over to the American President Lines in the reorganization under the Maritime Commission.

Larry Westdhal was an expert in his chosen profession. He knew the sea, and ships, and seamen, and was held in much respect by the maritime fraternity all over the Pacific littoral. He is survived by his widow, Alma, and three sons, Captain Philip Westdhal, Lawrence Westdahl of Alexander & Baldwin, and Richard Westdahl.

Harry Ewing's Mother

Harry C. Ewing's mother, Mrs. Charles S. Ewing, passed away in her San Francisco home, October 6. She was 80. Mr. Ewing is Pacific Coast manager of the Luckenbach Steamship Lines.

Two Matson Veterans

Belatedly, we report the deaths of two well-known and veteran members of the Matson Company. **William McLennan,** night engineer at pier 32, passed away on August 15. Mr. McLennan joined Matson in 1913, as first assistant engineer on the old Lurline. He served as chief on a number of their vessels. In 1935 he came shoreside to take the night engineering post.

Last September 24, Captain **James Reid,** night relief officer at pier 35, passed away. Thirty years was recorded in the service book of Captain Reid with the company. He is remembered as chief officer on the old Enterprise, Matson's first steamer.

RUSSELL H. HAVISIDE

Haviside Passes

Russell H. Haviside, treasurer of the Haviside Company, pioneer ship chandlery and rigging firm of San Francisco, passed away at his home on October 18 of a sudden heart attack. The death of this young, very popular and efficient executive was a great shock to the Pacific Coast marine fraternity.

Russell Haviside was a native son of San Francisco and grew up in the business founded by his forebears. He was prominent in the Propeller Club, and other organizations of marine men and will be sorely missed by his many friends and business associates.

PACIFIC NORTHWEST NEWS

(Continued from page 95)

Personal Gleanings

Ben D. Riley, manager and assistant secretary of the Merchants' Exchange of Seattle, still maintains offices for the organization, despite the war and the ban on shipping reports. The exchange moved February 15 from the Exchange Building to the 814 Second Avenue Building. **William Bailey,** chief clerk of the Marine Department of the exchange, now is in Government service. . . . **Dwight Hill** of Seattle, who was interned by the Japanese when they captured Hongkong and was one of the Americans from Japanese-occupied areas in the Orient, exchanged for Japanese officials and nationals, left early in October for London for a new assignment by the Moller Steamship Company, for which he was manager in the Far East. . . . **Elmer J. Steveson,** widely-known employee of the Puget Sound Navigation Company, the Black Ball Lines, has been appointed general agent in charge of ferry operations in the Fauntleroy-Vashon Heights-Harper and the Tahlequah-Point Defiance routes. He joined the company 16 years ago as freight cashier at the Colman Ferry Terminal in Seattle. . . . **Clarence H. Carlander,** president and general manager of the Puget Sound Freight Lines, in October completed his second year as head of the company. Unaffected by the rubber and gasoline situation, Puget Sound Freight Lines continues to keep the freight movement on the Sound going full blast. . . . **Joseph Randich,** former sports editor of The Aberdeen World, has been appointed general chairman of the labor-management committee of the Tacoma Division Seattle-Tacoma S. B. Corp.

Running LIGHTS

Who When Where

THIS LINE-UP OF SHIPBUILDING AND CONSTRUCTION LEADERS was snapped recently at the Marinship plant at Sausalito. Left to right they are: W. E. Waste, Marinship general manager; Kenneth K. Bechtel, vice president in charge of Marinship; S. D. Bechtel, president of the W. A. Bechtel Co., who is also president of the California Shipbuilding Corporation, vice president of Richmond yards One and Two and a director of the Oregon Shipbuilding Corporation; W. A. Bechtel, Jr., in charge of the company's vast copper operations in Arizona; Harry Morrison, president of Morrison-Knudsen Co., Inc. of Boise, Idaho; Felix Kahn of MacDonald & Kahn, Inc., and Carl W. Flesher, West Coast regional director, United States Maritime Commission. Morrison-Knudsen Co., Inc. and MacDonald & Kahn, Inc. are affiliated with the W. A. Bechtel Co. in the operation of the new Marinship yard, along with J. H. Pomeroy & Co., Inc., Raymond Concrete Pile Co., and Bechtel-McCone-Parsons Corporation.

A. G. PRATT, President of the Babcock & Wilcox Co., accepts the "M" Award.

MARITIME "M" AWARDED BABCOCK & WILCOX

Rear Admiral Emory S. Land, chairman of the U. S. Maritime Commission, also administrator of the U. S. War Shipping Administration, on September 1 awarded the Maritime Commission "M" burgee to the Barberton Works of The Babcock & Wilcox Company, 85 Liberty Street, New York, N. Y. The award represents the Commission's recognition of outstanding achievement.

The "M" burgee now flies alongside the Navy "E" burgee, which was awarded to The Babcock & Wilcox Company on May 11, 1942.

The Company is wholly engaged at present in the manufacture of power boilers and accessory equipment for the Navy, Maritime Commission, and war industries such as steel, chemical, aviation gasoline, artificial rubber, etc. The Company is also producing gun mounts for U. S. Naval vessels.

In accepting the award, A. G. Pratt, president of The Babcock & Wilcox Company, said, "The fact that our efforts have thus been recognized by the Maritime Commission will surely spur us on to even greater accomplishment. We are proud of our record in the past as well as today. During World War I, B&W supplied 1096 boilers for ships of the Emergency Fleet, which were operated by the predecessor of the present Maritime Commission. We are today supplying many boilers for the Commission's Liberty ships, other cargo vessels, and tankers. The boilers for all Liberty ships ordered to date will be built to a B&W design, even though many of them are being manufactured by seven other companies.

REAR ADMIRAL LAND presents the "M" Award.

"B&W is helping to build the Victory Fleet, and you men and women of Barberton Works are just as much shipbuilders as are those who build the hulls on our sea coasts. You have a slogan posted in your shops which reads:

" 'The boilers which we produce, power your country's Navy and cargo ships, and on their performance depend the lives of brave Americans, the defense of your country and your home and family. Be sure that your every effort is as near perfect as your knowledge and skill can make it. You have a responsibility.' Live up to that slogan and all that it implies and you will have accepted your responsibility. I have every belief that you will do so."

A brief address was also made by Governor John W. Bricker of Ohio. The ceremonies were broadcast over a nation-wide network.

Said Rear Admiral Emory S. Land in making the presentation: "The American Ship and Auxiliary Building Industry today is engaged in one of the most far-reaching construction efforts modern civilization has ever contemplated. Ships for supplies, ships for our troops, ships for planes, guns and tanks are the watchwords of the day. It is with a sincere sense of gratification that I can say to the 6,400 workers of the Babcock & Wilcox plant that American shipyard production is slowly but surely 'getting the edge' on Axis submarine activity. You 'shipbuilders' are going to town, for you are part—a vital part—of the ship assembly line.

"To men who have been building marine power equipment for as many years as you have, it is not necessary for me to caution you against waste, lost time and carelessness. To some of the newer men, however, may I say that these three are brothers-in-arms with our enemies, and if allowed to run rampant will bring into play a more effective fifth column than the three Axis powers could ever hope to establish within our country. Let's shoot at sunrise these three enemies—waste, lost time, and carelessness.

"The fighting men of the United Nations will keep 'em running. Your job here at Babcock & Wilcox is to 'keep 'em steaming for Victory.'

"More power to your elbow and give the Nazis and the Japs hell!"

THE MARITIME FLAG and "M" Burgee go aloft to the strains of "Song of the Victory Fleet."

THE MANAGEMENT-LABOR COMMITTEE of Todd Hoboken Dry Docks Inc. voted unanimously to donate all trophies won by the plant's various athletic teams to the scrap pile. Here are the trophies, with an approximate retail value of $2,000.

Wm. M. Kennedy To New Post

Having acted in the consulting capacity since April 1942 for the Wainwright Yard of the J. A. Jones Construction Company located at Panama City, Florida, Mr. William M. Kennedy has accepted a job as Assistant General Manager in complete charge of ship construction with that yard. In order to devote his entire time to this shipbuilding activity Mr. Kennedy has withdrawn from Condenser Service and Engineering Company Inc.

Previous to April 1942, Mr. Kennedy served in a consulting capacity for two shipyards building naval vessels, as what be known as a dollar a year man. Since August 1901 Mr. Kennedy has been engaged in shipbuilding and ship repairing, four years of this time being spent at sea. During the last war he served as assistant works manager at the Merchants Shipbuilding Company Bristol plant, and works manager at that company's Chester, Pennsylvania yard, formerly the old Roach yard. For more than two years he was supervising local manager for the United States Shipbuilding Board of 45 Broadway, New York City, and then for six years was general superintendent for W. and A. Fletcher Company engaged in general ship repairs and drydocking at Hoboken, New Jersey. From that position he came to the Condenser Service and Engineering Company Inc.

Mr. Kennedy is a member of the Society of Naval Architects and Marine Engineers, the American Society of Mechanical Engineers, The American Society of Naval Engineers, the North East Coast Institution of Engineers and Shipbuilders of England, the United States Naval Institute, the Propeller Club and the Whitehall Club.

In connection with the withdrawal of Mr. William Kennedy from Condenser Service and Engineering Company, Inc., the regular personnel of that company will carry on its business as heretofore.

NEW SAN FRANCISCO HOME FOR FAIRBANKS-MORSE

Fairbanks, Morse & Company, who for over twenty years were located in San Francisco at 35 Harrison Street, are now operating in their own new, attractive building at 630 Third Street, according to the recent announcement made by Roger M. Murray, San Francisco Branch Manager of the company.

"We have always had the greatest confidence in the importance of the City of San Francisco as a distribution center," said Mr. Murray, "and accordingly, after analyzing the situation, decided to purchase a building and remodel it to suit our specific requirements."

A reinforced concrete building formerly owned by the Colgate-Palmolive-Peet Company was purchased and now Fairbanks, Morse & Co. have one of the finest power machinery homes on the West Coast.

The building as now remodeled meets the three requirements of the company as regards Sales, Service, and Warehousing. It is centrally located in the industrial section, on the west side of Third Street between Brannan and Townsend Streets, being only one-half block from the Southern Pacific Terminal at Third and Townsend Streets. Street car service is excellent, and Third Street being one of the main North and South arterials, it is readily accessible by automobile.

The building has a frontage of 125 ft. on Third Street and extends 150 ft. to the rear on Ritch Street, providing 42,000 sq. ft. of floor space on two floors of 21,000 sq. ft. each. It is served by a private spur track and has four inside truckloading bays, opening on Ritch Street.

The remodeling work was particularly extensive as regards office accommodations. The Sales and Accounting Offices are located on the second floor of the building, and are separated by the hall and stairway leading to the offices. All new partitions were placed in the offices, along with new windows fronting on Third Street and new display windows on the lower floor facing Third Street. Office floors are covered with brown battleship linoleum; ceiling is in white acousti-celotex. The wall finish is in light pastel green. Doors, panels, and window casements are of light oak. Fixtures include venetian blinds, and fluorescent lights. Heating and ventilating are provided by a Fairbanks-Morse air conditioning plant connected to an oil furnace. This equipment is completely automatic in operation, and provides ideal working atmosphere.

Drafting and blueprint rooms are provided in the rear of the sales office. Directly back of the accounting office on the second floor is the repair parts department, containing some 12,000 items of repairs for the various models of pumps, motors and diesel engines. The balance of the second floor is given over to stocks of pumps, and electric motor units. The ground floor is divided into engine repair shop, scale repair shop, scale parts department, scale stock, heavy engine, pump and motor stocks, as well as extensive dealer line stock, consisting of water systems, light plants, hammer mills, windmills, etc. Shipping and receiving departments are also situated on the main floor, rear, and provide every facility. The repair shops are efficiently laid out, well lighted, and provided with up-to-date equipment for the complete servicing of all products.

The entire building has been attractively painted, materially improving the district generally. The show windows have occasioned considerable favorable comment. The plan all the way through, in the setting up of this new branch house headquarters, was to enable Fairbanks, Morse & Co. to render even better service than in the past to the many customers the company enjoys in the San Francisco territory. The San Francisco territory includes the State of California, north of the Tehachapis, State of Nevada, State of Utah, Southern Idaho, two Western Counties in Wyoming, and the Hawaiian Islands.

Roger M. Murray, the company's San Francisco manager, is well known and universally liked up and down the coast. "Rog," as

ROGER M. MURRAY, Manager, Fairbanks Morse & Co.

he is affectionately called by his host of friends, has been a Fairbanks-Morse man since back in 1916 when he started with the organization as a clerk in the dealer department. In 1919 he went East to the company's big plant at Beloit, Wisconsin, where he took a special student training course, which in addition to assembly and test work, also included service trips to both the East and West coasts.

In 1921 he returned to San Francisco to handle the metropolitan sales work in that city. In rapid succession he took over sales territories with headquarters at Sacramento and later Salt Lake City, Utah where he was sub-branch manager. His promotions continued. He became diesel department manager of the San Francisco branch in 1931 only to become general manager of the branch in 1933, which position he now holds.

Each sales department is headed by an expert in his particular line and these men are available for engineering consultation. The department managers are as follows:

Diesel Engine Department . .	Howard Oxsen
Scale Department	Elmer Stine
Pump Department	Earl McCord
Electric Department	Harry Nagel
Air Conditioning Department .	William McIntyre
Dealer Department	Wallace Gunn
Sales Promotion Department .	James Hainline
Priority Department	Donald Jennings

Mr. F. G. Kirner is credit manager and E. B. Neville is manager of the accounting department.

IMPRESSIVE SALES OFFICE in the new location of F-M.

DR. GRADY'S MESSAGE

(Continued from page 67)

fact that both shipping and air transport in foreign countries are pretty generally nationalized does not make our problem any easier. On the contrary, we must make every effort to meet this competition in the good old-fashioned American way. This way, of course, is in consonance with the premise on which the Merchant Marine Act of 1936 and the Civil Aeronautics Act of 1938 were predicated — namely, Private Ownership and Operation, and equal economic opportunity.

In the United States at this time, the existing law has unfortunately been interpreted as "effectively eliminating common carriers, other than air carriers, from the general air transportation field in the future." This apparently grows out of a condition of many years past where it was felt the railroads might, through ownership or acquisition, throttle paralleling steamship, truck or bus lines. It is a situation in no way comparable with that confronting offshore sea and air transportation.

This brings into consideration the fine distinction between commerce within and without our borders. The same laws designed to regulate interstate traffic and competition within given national boundaries certainly should not be invoked to regulate overseas commerce.

Governments, in dealing with air transport, quite naturally take program and direction from precedents found in the long and comprehensive record of dealing with other means of transportation and communication. The result is that almost every feature of today's governmental policies toward air transport finds in that record its analogies.

If such concepts are carried to their ultimate conclusion, they will do violence and irreparable damage to the American merchant marine, which is recognized today more than ever before as a bulwark in maintaining our national

PROPELLER CLUB OF THE UNITED STATES. Reading from left to right: Harold Harding, Secretary; Captain R. Lee, National President; Arthur M. Tode, Honorary President; J. H. Godwin, National Treasurer.

economy and as an instrument of national defense. This damage will be accomplished by the simple expedient of denying to the old, established steamship lines the privilege of participating on a proper basis and in the public interest in the advances of science as represented by new and improved methods of transportation. This, it seems to me, is fundamentally wrong and un-American.

The job of our Merchant Marine, in addition to its service as auxiliary to the Navy, is to furnish adequate transportation service over water. In doing this job, it not only should have the right, but it actually has the duty and obligation to take full advantage of new and changing techniques. Only by so doing can it furnish shippers and passengers proper services and meet its responsibility. Its equipment has moved forward from sailing ships to clippers and to modern, fast, efficient steam-, electric- and motor-propelled liners. It should not be deterred, but rather encouraged, to avail itself of the further advancement in engineering science. Only by meeting the challenge of progress can it adequately develop and discharge its proper functions and responsibilities to the public. To deny it the right to supplement its service with air transport would be analogous to denying it the right years ago to change from sail to steam.

Looking at it another way, under this interpretation of the law, a steamship company, no matter how foresighted it may be, would have no means of availing itself of the advances in science and the benefits of newer forms of transportation, and if extended to its logical conclusion, the ruling would prevent any form of industry from benefiting from radical new methods of producing or merchandising its product. As I said before, this is distinctly not the American concept.

MR. ARTHUR M. TODE
Honorary President, Propeller Club of the U. S.

Air transport, in its international aspects, is a powerful instrument of national policy. It is at once military, commercial and political; serving likewise the national aims of prestige and propaganda. It should not, under any circumstances, be shackled by precedents of domestic traffic regulations. It should be free to carry the flag to the remote corners of the earth under whatever conditions and combines appear to be in the public and national interest.

However the world may be organized, or disorganized, after the

Captain R. Lee, USN; L. B. Pate, Mississippi Shipping Co.; R. R. Adams, Exec. Vice President, Grace Lines.

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BATHIRON

BATH, MAINE

February 7, 1941

Wallace Supplies Mfg. Company
1310 Diversey Parkway,
Chicago, Illinois

Gentlemen:

We are glad to state our experience with your bending equipment.

We have two machines, one of the ½" to 2" capacity, and one of 2" to 8" capacity. We are also planning to buy another 2" machine. The machines produce clean, smooth bends, at a great saving in labor costs. We bend in four hours the work which formerly required six days by our filling and heating method.

Very truly yours,
BATH IRON WORKS CORPORATION
H.C. Bates
Howard C. Bates
Assistant Superintendent
of Machinery

HCB:R

WALLACE
SUPPLIES
MANUFACTURING CO.
BENDING SPECIALISTS
SINCE 1900
1304 Diversey Pky., CHICAGO
CATALOG ON REQUEST

war, overseas commercial air transport should remain the auxiliary of military air power just as the merchant marine should remain the indispensable auxiliary of the Navy. And the two, representing a single concept, should be interrelated to the end that the highest military, economic and political aims of this country may be served.

Port of Tacoma

The first dinner and meeting of the Propeller Club, Port of Tacoma, for the Fall season was held Tuesday evening, October 20th, at the University-Union Club, with the usual social hour at 6:30 and the dinner at 7:15.

A good representation of the members of the Club turned out for the affair, along with their guests, many of whom were from the Navy and one from the Army.

The meeting was called to order by Vice President K. M. Kennell, in the absence of our President Perry Moore. Mr. Kennell called on each member to introduce his guest to the Club. Included among them were Hugh Godwin of the Shaffer Terminals, Inc. and Roy Stillion of the Public Roads Administration, both of whom are joining our Club.

Immediately after the introductions were made, Mr. Kennell called on Phil Spaulding of the Seattle-Tacoma Shipbuilding Corp. to introduce the speaker of the evening, Lieut. Grose of the U. S. Navy. Lieut. Grose gave a very graphic picture of his experiences in action in the South Pacific.

After the above address, a few announcements were made, and then the meeting was adjourned.

Chas. C. Cramp,
Secretary.

Port of San Francisco

President Arthur B. Poole has appointed a Nominating Committee and requested the gentlemen thereon to submit a slate for the consideration of members at the Annual Meeting to be held on November 4 for the purpose of elections.

IN ATTENDANCE AT THE SIXTEENTH ANNUAL CONVENTION of the Propeller Club of the United States, at the Waldorf-Astoria, New York City, on October 15 and 16, 1942. Reading left to right: Arthur M. Tode, Charles H. C. Pearsall, Thomas A. Scott, Captain Robert C. Lee, USN.

M. J. Buckley, Chairman, and Messrs. Edward Crossan, John Davidson, Fred Doelker, Frank Fox and Byron Pickard composed the Nominating Committee and these gentlemen have submitted the following candidates:

President, Hugh Gallagher; 1st Vice President, Fred Doelker; 2nd Vice President, George A. Armes; 3rd Vice President, W. J. Bush; Sec'y-Treasurer, Eugene F. Hoffman.

One Year Governors: Henry Blackstone, Hugh Gallagher, George Jordan, Joseph A. Moore, Sr., Byron O. Pickard (Filling Capt. Mesherry's unexpired term).

Two Year Governors: George A. Armes, John Davidson, K. H. Donavin, John Greany, Robert D. Spear.

Three Year Governors: Fred Doelker, W. J. Bush, Harry Euing, Charles L. Wheeler, A. B. Poole.

Lights, Inc. Names New Men

Thayer Thorndike, president and **Harry S. Kimball,** managing director of Lights, Incorporated of Alhambra, California, announced the appointment of **Thomas F. Morrissey** as director of planning and engineering and the appointment of **Victor G. Paradise** as director of sales.

Mr. Morrissey until recently was the assistant district manager of the Army Air Forces Western Procurement District. Prior to his affiliation with the Army Air Force, Mr. Morrissey had extensive experience as an engineer in the aviation industry, having served with Curtis Wright in Buffalo during World War I.

Mr. Paradise is a former officer and director of Morrow Aircraft Corporation of San Bernardino, California, prior to which he was a director of the Freeport Sulphur Company, William Jameson & Company, Inc. and a partner of Frazier Jelke & Company in the East.

Lights, Incorporated are prime contractors employing extensive subcontracting associates as suppliers of materials in the war effort.

Looking for Trouble

. . . and insured against it. The firing punch of the American battleship means trouble in full measure to enemy trespassers. She can dish it out and she can take it. Both above and below deck every protective measure has been provided in her design and construction. Above deck it is the mammoth guns—the armoured plates of toughest steel. Below, it is Sharples Centrifugal equipment to insure against a break-down of the giant turbines and engines. Abrasives, water and sludge in lubricating oil are primary causes of engine trouble on seagoing craft and the Sharples application of centrifugal force is the proven way to continuously provide clean lubricating and fuel oil.

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Representatives throughout the world

MASTER OF CEREMONIES G. Rulofson is getting ready to start things, with Virginia Congdon and C. Lindberg standing by to help.

TWO UPPER VIEWS, a portion of the crowd listening to the drawing of gate prize Prior to the drawing (right), P. L. Joslyn is conferring with C. Sessions (with th black hat). Gate prizes are on table in foregound. Two lower views: The sack rac and (right) Mr. H. Nelson and wife with guest Warren F. Morten to their righ

Joslyn & Ryan . . .

GIVE A PICNIC

Carl O. Lindbergh conceived the Joslyn & Ryan picnic on a Monday, and, after some high-pressure promotion, helped put it over on the following Sunday, October 4, at Atherton Park in Menlo Park, California. Mr. Lindbergh is a rigging expert at the J. & R. naval architects' office in San Francisco.

George Rulofson, the master of ceremonies and the mechanical genius of the company, was everywhere helping coordinate the events.

C. R. Sessions, in charge of the hull planning of the salvage vessels, did a magnificent job of running off the athletic events in clock-like order.

E. Mitchell Breingan, chief hull draftsman, started all races, and J. H. Laidman judged the finishes.

The more than 200 persons attending the picnic were greeted by gate-keeper **William G. Winter,** attired as a sheriff, even to the badge; they were entertained from time to time over the loudspeaker, which was made possible by **Sam Gazzano,** a licensed radio operator; and they thoroughly enjoyed the potato salad, made by **Mrs. Carl Lindbergh,** and Mrs. Thorson's Swedish style hot dogs.

THE EVENTS OF THE DAY. Left side, top, shows part of the group waiting for th events to start, while (bottom) the mens' tug-o-war is in process. In the foregroun (left to right) are James Laidman, C. Sessions and C. Lindberg. The Right side: Mr Sessions is "egging" the girls on to the egg race, which is seen below. The girls showed some strength in their tug-o-war, bottom.

Pacific Marine Review

Published monthly with current changes and appointments. Regarding new listings, please communicate with Directory Editor, Pacific Marine Review, 500 Sansome Street, San Francisco, California.

DIRECTORY of EXECUTIVES IN . . . *American Shipyards*

Pacific Coast

AETNA CONSTRUCTION COMPANY
Los Angeles, California

ALBINA ENG. & MACHINE WORKS, Inc.
2103 N. Clark Ave.
Portland, Oregon
President: George Rodgers.
Vice President and Manager: L. R. Hussa.
Treasurer: H. W. Erren.
Naval Architect: C. F. Butler.
Purchasing Agent: T. J. Cousins.

ALLIED ENGINE & SHIPBUILDING CORP.
4001 So. Harvard Blvd.
Los Angeles, Calif.

AMERICAN PIPE & CONSTRUCTION
Lido Canal
Newport Beach, Calif.
Superintendent: H. C. Clark.

ANACORTES SHIPBUILDERS
P. O. Box 111
Anacortes, Washington

ANDERSON & CHRISTOFANI
Innes & Griffiths Sts.
San Francisco, Calif.

ANDERSON SHIPBUILDING CORP.
329 Willow Street
Seattle, Washington

ASSOCIATED SHIPBUILDERS
2727-16th Ave., S. W.
Seattle, Wash.
General Manager: G. H. Stebbins.
Chief Engineer: C. W. Johnson
Yard Supt.: Charles M. Rohda.
Purchasing Agent: E. B. Devener.
Procurement Manager: R. K. Jaggar.

ASTORIA MARINE CONSTRUCTION CO.
Astoria, Ore.
President: Joseph M. Dyer.
Vice President and Manager: G. J. McClean.
Treasurer: Geo. Sheahan.
Naval Architect: Joseph M. Dyer.
Chief Engineer: H. M. Dole.
Purchasing Agent: Richard Schroeder.

ASTORIA-WARRENTON SHIPYARDS, INC.
Astoria, Oregon
President: O. R. McNall.
Vice President: Arthur Clare.
Manager: A. J. Roberts.
Naval Architect: Mario Palmieri.
Gen. Supt.: Wm. Braman.
Purchasing Agent: O. R. McNall.

ASTORIA SHIPYARDS, INC.
Santa Barbara, California

BALLARD MARINE RAILWAY CO.
5351-24th, N. W.
Seattle, Washington
President: W. G. Fryberg.
Vice President: E. C. Smith.
Manager: H. F. Fryberg.

GEORGE BABARE
Tacoma, Washington

BARBEE MARINE YARDS, INC.
Foot of 26th Ave. N. W.
Seattle, Washington

BELAIR SHIPYARD DIVISION
Barrett & Hilp
P. O. Box 675
South San Francisco, California

BASALT ROCK CO., INC.
Shipbuilding Yard—Napa, California
President: A. G. Streblow.
Vice President: Walter Fawcett.
Manager: A. G. Streblow.
Naval Architect: D. McCall.
Chief Engineer: E. Godsil.
Purchasing Agent: J. E. Godley.

BEAVER BOAT WORKS
Portland, Oregon

BELLINGHAM M. R. & B. B. CO.
Bellingham, Washington
Owner: A. W. Talbot.
General Manager: R. S. Talbot, Jr.
Naval Architect: W. C. Howell.
Chief Engineer: Edward Lonke.
Superintendent: E. Thorsen.
Purchasing Agents: J. A. Anderson, H. W. Talbot and M. L. Ecker.

BERKELEY STEEL CONSTRUCTION CO.
2nd and Camelia
Berkeley, California

BETHLEHEM STEEL COMPANY, INC.
Shipbuilding Division—San Francisco Yard
20th & Illinois Sts.
General Manager: A. S. Gunn.
Assistant General Manager: W. M. Laughton.
Sales Manager: J. T. Greany.
Assistant Purchasing Agent: C. B. Minnes.
Alameda Yard
Manager: Fred McLean.
San Pedro Yard
Manager: Thomas Forster.
Sales Manager: William A. Harrington.

BIRCHFIELD BOILER CO., INC.
Tacoma, Washington
President and Manager: A. Davies.
Naval Architect: Silas E. Nelsen.
Chief Engineer: Ralph Kenton.
Yard Mgr.: Paul Dahl.
Yard Supt.: J. B. Thatcher.
Hull Supt.: Jack Pennington.
Purchasing Agent: Gus Nyman.

N. J. BLANCHARD BOAT CO.
3201 Fairview Ave.
Seattle, Washington
President and Manager: N. J. Blanchard.
Vice President: C. P. Blanchard.
Purchasing Agent: J. L. Patton.

CALIFORNIA MARINE INDUSTRIES, INC.
Newport Beach, California
Purchasing Agent: J. B. Curtis.

PACIFIC COAST MARINE GOVERNMENT DIRECTORY

MARITIME COMMISSION
Regional Director of Construction
Carl W. Flesher
Financial Bldg.
Oakland, Calif.
Phone: TEmplebar 7638
Coordinator of Ship Repair and Conversion
J. H. Lofland
L. C. Lundquist, Asst.
Stock Exchange Bldg.
San Francisco, Calif.
Phone: YUkon 0960

WAR PRODUCTION BOARD
Production and Contract Division

San Francisco—
Col. F. M. Smith
1355 Market Street
Phone: KLondike 2-2300

Los Angeles—
Fred L. Arnold (Office Mgr.)
1031 South Broadway

CALIFORNIA SHIPBUILDING CORP.
Wilmington, California

President: S. D. Bechtel.
Vice President: J. A. McCone.
General Manager: J. K. Doolan.
Adm. Mgr.: J. M. Warfield.
Chief Engineer: W. C. Ryan.
Manager of Production: J. S. Sides.
Manager of Outfitting: Albert O. Pegg.
Naval Architect: W. C. Allen.
Production Control Manager: J. C. Byrne.
Purchasing Agent: H. A. Keeler.

CALIFORNIA STEEL PRODUCTS COMPANY—MARINE DIVISION
Foot of 16th Ave.
Oakland, California
Marine Superintendent: E. J. Shaw.

CAMPBELL MACHINE CO.
Foot of 8th St.
San Diego, Calif.
Partners: David C. and George E. Campbell.
Chief Naval Architect: M. Madruga.
Plant Superintendent: David C. Campbell.
Purchasing Agent: O. C. Edson.
Hull Superintendent: M. Madruga.

CAPITAL CITY SHIPBUILDING COMPANY
Sacramento, California
President: W. H. Stevens.

CARMAC SHIPYARDS, INC.
Foot of 28th Ave., N. W.
Seattle, Washington

CHILMAN SHIPYARD
Hoquiam, Washington
President and Owner: Ivar Chilman.

COLBERG BOAT WORKS
Stockton and W. Lindsey Streets
Stockton, California

COLUMBIA RIVER PACKERS ASSN., INC.—SHIPYARD DIVISION
Astoria, Oregon
President: E. W. Thompson.
Vice President: T. F. Sandoz.
Manager: W. B. Wootton.
Naval Architect: J. E. Wicks.
Chief Engineer: A. Lindstrom.
Purchasing Agent: R. C. Larson.

COLUMBIA SHIPBUILDING CO.
Portland, Oregon
Plant: Columbia City, Oregon

COLUMBIA SHIPBUILDING CORP.
San Pedro, California
Plant: Los Angeles, California

COMMERCIAL IRON WORKS
Foot of S. W. Gibbs St.
Portland, Oregon
President: Winston W. Casey.
Executive Vice President and Gen. Manager: Henry A. White.
Vice President: Edward L. Casey.
Naval Architect: Willis G. Telfer.
Chief Engineer: Ray Purdy.
Purchasing Agent: Dee M. Hampton.

CONCRETE SHIP CONSTRUCTORS
National City, California
Managing Partners: Carlos Tavares and R. S. Seabrook.
Naval Architect: D. M. Callis.
Chief Engineer: R. H. Annin.
Superintendent: J. Meents.
Purchasing Agent: C. L. Wurster.

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Los Angeles, California
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Wilmington, Calif., Shipbuilding Div.
Long Beach, Calif., Shipbuilding Div.
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Vice President in Charge of Production: Lloyd R. Earl.
Vice President in Charge of Finance: F. J. Knoeppel.
Treasurer: Edward H. LeBreton.
Secretary: John M. Robinson, Jr.
Production Manager: John J. McNerney.
Naval Architect (Wilmington): D. G. Warren.
Purchasing Agent: H. W. Abramson.
Manager of Personnel: C. W. Giegerich.

COTTON ENGINEERING & SHIPBUILDING CO.
Port Townsend, Washington

CRAIG SHIPBUILDING CO.
Long Beach, California
President: James B. Craig.

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LIFE SAVING SUITS
"Like a duck in water"
SO SAFE . . . SO SECURE . . . SO COMFORTABLE
The Most Advanced Model of Life Saving Suits Available Today . . . Approved by the United States Coast Guard

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2. Rubber boots attached
3. Quick and easy to pull on over shoes and clothes
4. Special "Rope Pull" closure
5. Rubber-coated on strong fabric
6. Light in weight yet durable

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Mills Trenton, N. J.
Established 1873

DEFENSE CONSTRUCTION INC.
San Francisco, California

EDLUND LOGGING COMPANY
Anacortes, Washington

EDMONDS BOAT HOUSE
Edmonds, Washington
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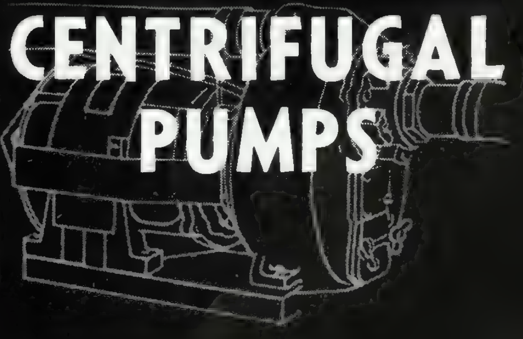

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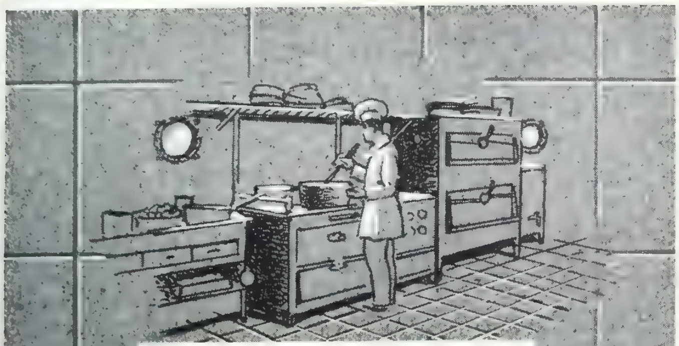

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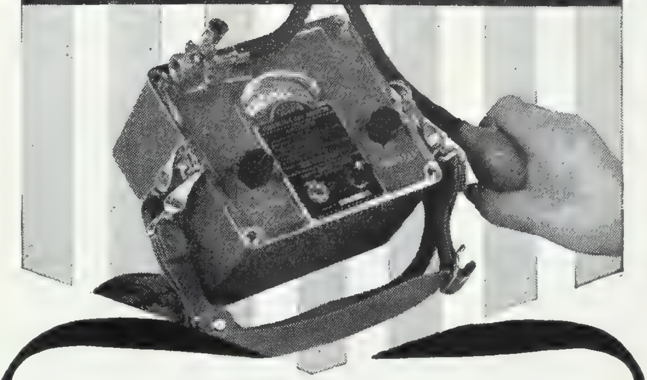

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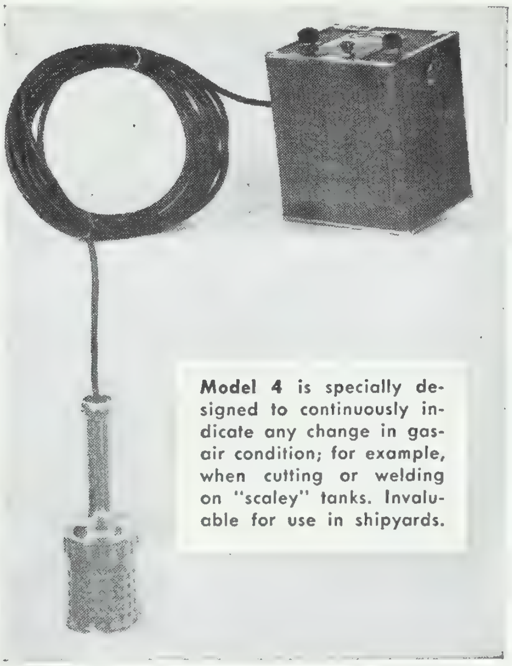

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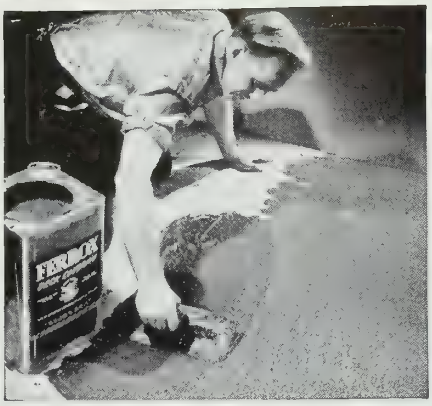

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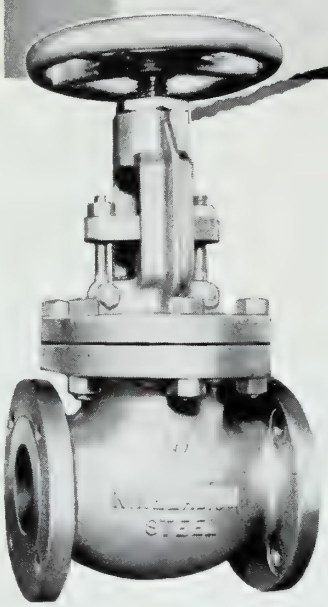

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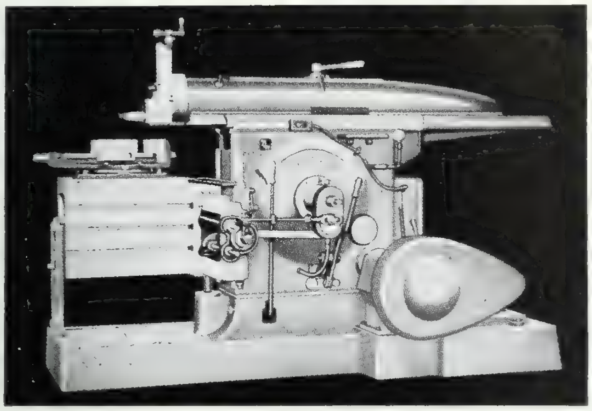

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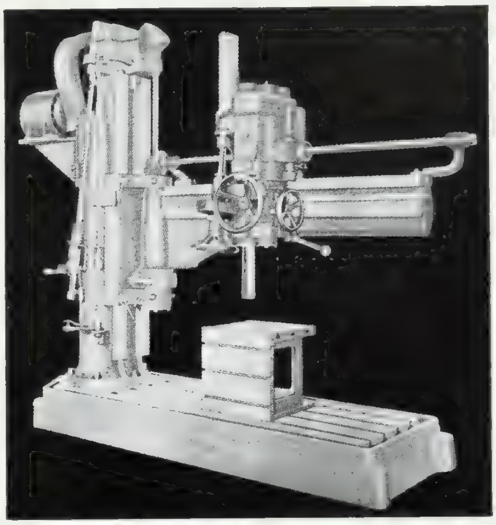

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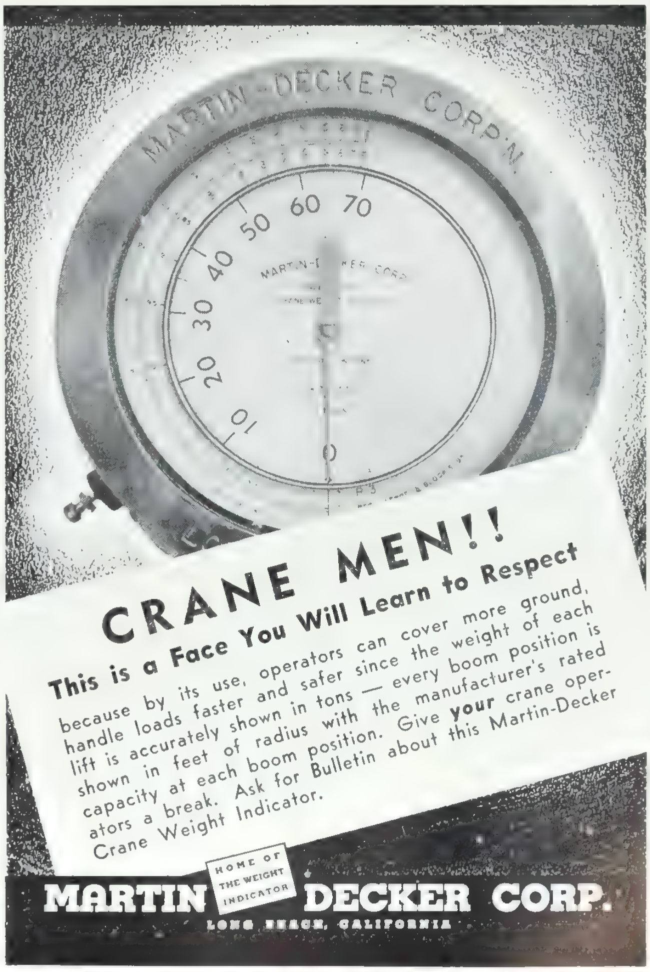

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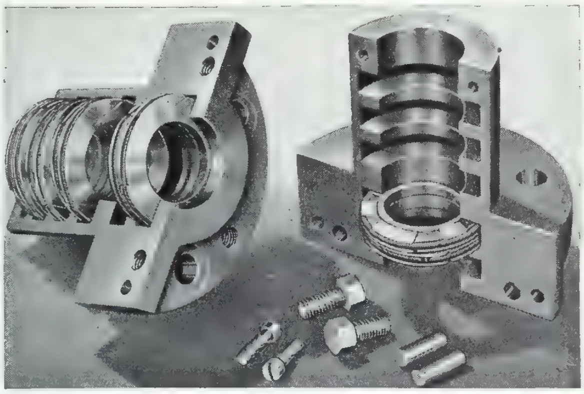

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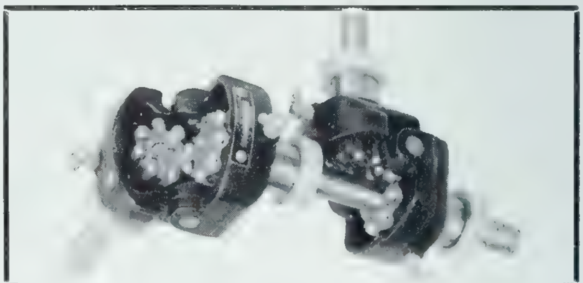

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FOUNDATION OF THE SHIP

(Continued from page 73)

Wetted surface is the only quantity involved in this formula which we have not, so far, either assumed or calculated. It is the surface area of the entire body of the ship below the water line. To get it exactly involves a long and very tedious set of measurements and calculations. Fortunately, naval architects have worked out a simple formula that gives a close enough approximation for our purpose. This formula is:

$$S = 1.7\ L \times D + (V/D)$$

Where L = Length in feet between perpendiculars

D = Draft in feet

V = Volume of displacement in cubic feet

Substituting the values for our ship, we have:

$$S = 1.7 \times 422 \times 25 + (490{,}000/25)$$

or $S = 37{,}435$ sq. ft.

Substituting this value in the second horsepower formula, we get:

$$H = \frac{5 \times 37{,}435 \times 1728}{100{,}000}$$

or $H = 3234.4$

Taking an average round figure of the two values, let's assume 3400 horsepower. The principal value of these formulae is to give the designer in the preliminary stages of the design a workable rough idea of the total weights involved, so that he can be sure that his 14,000-ton total displacement can carry 9000 tons of cargo plus the weights of the hull and superstructure, the machinery, the necessary fuel, the necessary fresh water, and the crew and stores.

Hot Off the Press

Micromax Thermocouple Pyrometers, catalog N33A, just reissued in modern, up-to-date form by the Leeds and Northrup Company, 4934 Stenton Ave., Philadelphia, Penn.

In 56 well-illustrated pages, this book tries to cut correspondence and to give wartime pyrometer users first hand the information they want about available instruments—indicators, recorders and controllers—and about the thermo-couples and accessories which are used with them.

If, as a result of wartime conversion, you're a new or prospective user of balance-type (potentiometer) pyrometers, you'll be particularly interested in the concise but comprehensive description this book contains of how the basically-sound balance method is applied to the measurement and control of thermocouple temperatures.

Keep 'Em Working, is a new book published by Caterpiller Tractor Co. of Peoria, Illinois, to aid owners of "Caterpillar" products in getting the most out of their machines.

Supplementing operator's instruction books, this 50 - page book gives the reasons behind the maintenance and operation instructions, goes into greater detail on the care of certain critical parts, and gives general information that is not conveniently available elsewhere.

Owners of "Caterpillar" equipment interested in receiving a free copy should request Form No. 7609.

Water Gage Equipment. The Reliance Gauge Column Company, Cleveland, Ohio, has published a new catalog of Water Gage Equipment for Marine Service, identified as Bulletin 431. Illustrates and describes water gage valves for various working steam pressures, water gage inserts, illuminating equipment for gages, and remote reading for boilers and tanks.

STATEMENT OF OWNERSHIP

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of PACIFIC MARINE REVIEW, published monthly at San Francisco, California, for October 1, 1942. State of California, County of San Francisco.

Before me, a notary in and for the State and county aforesaid, personally appeared BERNARD N. DeROCHIE, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the PACIFIC MARINE REVIEW and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, JAMES S. HINES, 500 Sansome St., San Francisco.

Editor, ALEX J. DICKIE, 1036 Mariposa Ave., Berkeley.

Managing Editor ——.

Business Manager, Bernard N. De Rochie, 500 Sansome St., San Francisco.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

JAMES S. HINES, Owner.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

B. N. DeROCHIE,
Business Manager.

Sworn to and subscribed before me this 23rd day of September, 1942.

EDITH GOEWEY,
(SEAL) Notary Public in and for the City and County of San Francisco, State of California.
(My commission expires December 23, 1944.)

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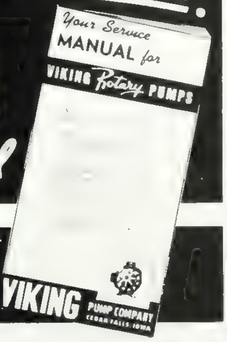

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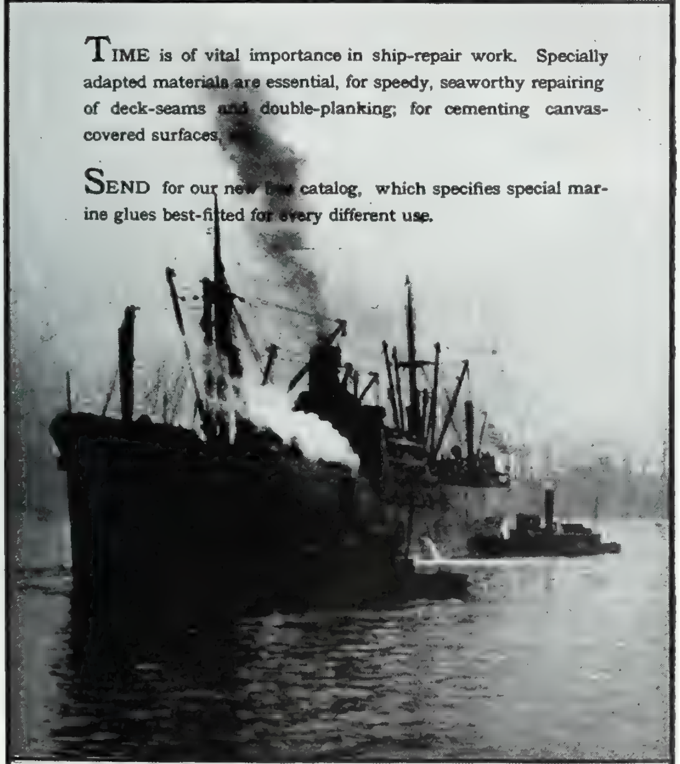

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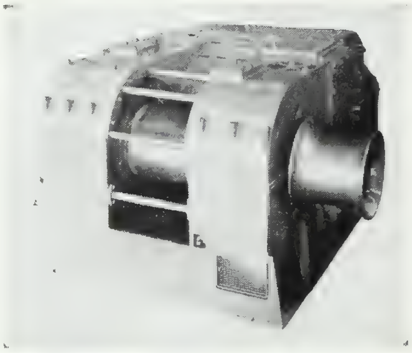

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KEEP POSTED

(Continued from Page 104)

All slides are of nickel-vanadium-chrome iron and move in steel races. The base and frame are built up of rolled steel plates welded by the shield arc process.

In production work, these machines have records ranging from 300 to 400 bends an hour. One large shipbuilder says he has paid for the Wallace machine with the labor saved building one ship.

Another popular Wallace specialty is the portable hydraulic bender shown in one of the illustrations. This is a self-contained unit with electric-driven rotary hydraulic pump, and a direct-action hydraulic ram.

It is made in three sizes having respective capacities for a 2″ pipe, 4″ pipe and 6″ pipe. Dies and tools are available for equipping these machines to bend any of the ductile metals in any of the ordinary shapes.

ELECTRIC-HYDRAULIC STEERERS BUILT AT SEATTLE PLANT

CHRISTENING OF the first electric hydraulic steering gear to be built completely on the Pacific Coast was the feature of the ceremony held August 22 in the plant of the **Stetson-Ross Machinery Company** of Seattle. Mrs. Paul DeFaccio, wife of the plant superintendent, christened the new steerer "Lady Victory" and it was dedicated to the American war effort with the slogan "Steer for Victory."

W. T. Pritchard, president of the company, received the authorization of the U. S. Maritime Commission, four months prior to this ceremony, to build a number of steerers for the vessels being constructed by West Coast yards.

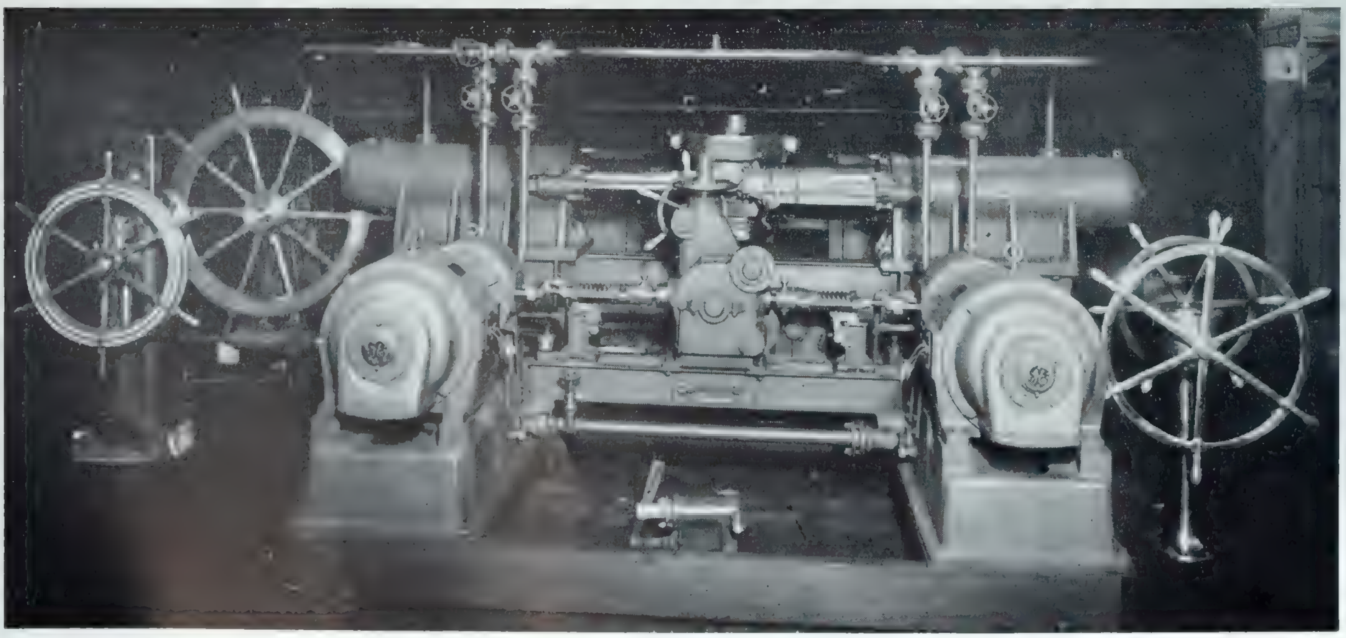
These steerers are of the standard American Engineering Company two-ram design, and drawings were furnished by that firm through the Maritime Commission. Drawings were received on April 16, 1942. The first of these engines was approved by the American Bureau of Shipping and accepted for the Maritime Commission on August 22.

For 35 years the Stetson-Ross Company has manufactured heavy-duty sawmill equipment, and its plant and trained personnel were easily adapted to the production of essential war material. Plant expansion is being planned, according to F. H. Nicholson, chief engineer, that will permit the application of assembly-line production to the production of these steerers.

"Right now," he explained, "our great need is for more machinists, men who are not now employed in work that is as essential as war production." The plant has an active labor-management committee.

Acting as master of ceremonies for the celebration was Paul DeFaccio, plant superintendent. Invited guests included representatives of the shipyards and suppliers of important materials. Employees and their families took part in the dedication and were enthusiastic in their pledge to speed up production still faster.

Others participating were: R. W. Condon, director, Stetson-Ross Machine Co.; Edith B. Cooper, Howard Schwalbach, E. W. Bergstrom, John Fosmire.



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NEW TURBINE PLANT AHEAD OF SCHEDULE

The new Westinghouse Merchant Marine Division today shipped its first complete ship propulsion unit, nearly four months ahead of schedule.

Loaded on a special freight train, the 63-ton assembly was started on its way to a West Coast shipyard, for installation in a new war cargo vessel, on a signal from Ellis L. Spray, manager of the Westinghouse Electric & Manufacturing Company's Merchant Marine Division. Mr. Spray congratulated the plant's workmen during a brief ceremony, which was held in the interval between shifts to avoid loss of production time.

Original production schedules for the new plant called for completion of the first propulsion unit next February.

Although tooling and manning of the plant will continue until next spring, production meantime will be climbing month by month so that even before the plant is completed, shipments are expected to reach contract capacity. By next September the plant will be bettering this contract capacity by one-third.

This new $26,000,000 plant, the first steel for which was erected last Armistice Day (Nov. 11, 1941), was built and is operated by Westinghouse to produce geared-turbine propulsion equipment on a quantity basis for Maritime Commission cargo vessels. Funds for its construction were supplied by the Defense Plant Corporation.

Production of the first complete unit four months ahead of schedule was possible because, even before construction of the plant was formally authorized by the Government, orders for machine tools were placed and recruiting and training of new workers begun.

As quickly as each new section of the plant was roofed, tools were moved in and set up, ready for operation. Meantime, local vocational and high schools, and the adjacent Westinghouse Steam Division plant, were cooperating in the training of new employees.

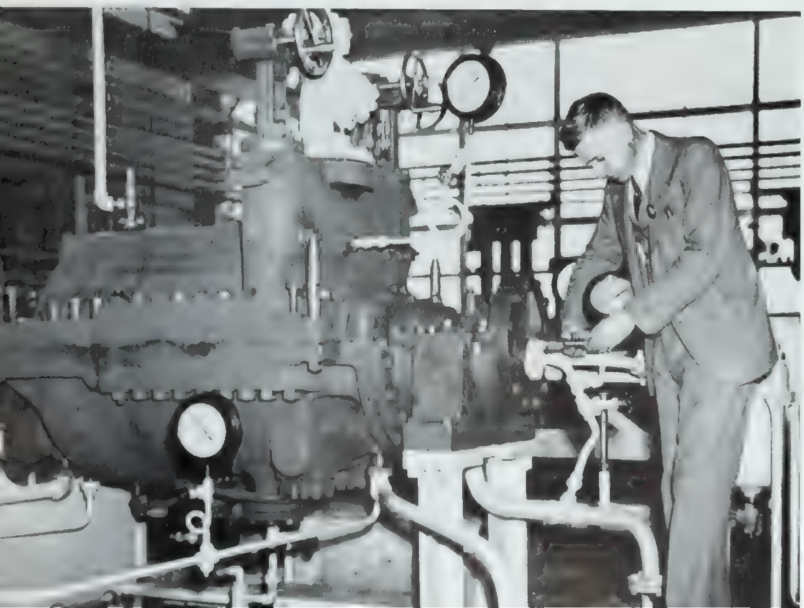
Seventy-five per cent of the division's supervisory personnel were drawn from other war plants of the Westinghouse Company. It was their job to train the new employees, 94 per cent of whom had no previous factory experience.

This first propulsion unit shipped will power one of the Maritime Commission's standard war cargo vessels now being built in a West Coast shipyard. The shipbuilder expects to have the unit installed and the ship in service by mid-December as his yard is also well ahead of schedule.

STEEL LOCKER CONSERVATION

It is important that steel locker installations be kept in good condition for the duration. New steel lockers will not be available and repair parts difficult to get.

In order to promote locker room safety and prevent locker damage,



SHIP TURBINE ON TEST. This high-pressure steam turbine, supplying 2000 hp, is part of a complete ship propulsion unit shipped four months ahead of schedule from the new Westinghouse Merchant Marine Division. George H. Newton, superintendent of quality control at the new plant, checks performance of the machine.

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Penn Metal Corporation of Pennsylvania, has prepared a poster to be placed conspicuously in locker rooms. Its purpose is to impress students and workers with the importance of proper use and care of steel lockers. The poster is red and black, size 19"x25", and is offered without charge to all who request it. Thousands have already been distributed and enthusiastic response necessitates a second printing. Address the corporation at 36 Oregon Ave., Philadelphia, Pa.

NEW A-C ALL-POSITION WELDING ELECTRODE

A new electrode designed specifically for all-position welding of mild steel with ac type welding machines has been developed by Air Reduction Sales Company in ⅛" and 5/32" diameters. Made to fill a rapidly growing need for a high quality ac electrode for all-position use, the Airco No. 230 electrode complies with all requirements of the American Welding Society Classification E6011, American Bureau of Shipping, Group H1G and B1G for ac and other specifications qualifying it for use on war work.

Physical tests demonstrate that this electrode gives the following exceptionally satisfactory results: Ultimate tensile strength, 70,000-75,000 as welded, 65,000-70,000 stress relieved; Per cent elongation in 2", 25-30% as welded, 30-35% stress relieved.

An outstanding characteristic of this ac electrode is that average operators have no difficulty in securing good fusion and complete penetration. The finished weld deposit is quite smooth and has a uniform surface contour.

GLASS FIBERS TO REPLACE ALUMINUM

The Navy Department, in cooperation with Owens - Corning Fiberglas Corporation, has developed a glass fiber board for the heat insulation and interior finish of fighting ships and auxiliary vessels, which, since the first of the year, has saved five and a half million pounds of aluminum, together with other scarce, lightweight materials that would otherwise have been used for this purpose.

The amount of aluminum saved is approximately equivalent to that required for the construction of 250 Flying Fortresses. Raw materials needed for the manufacture of the glass fiber board are practically unlimited and all are found within the continental borders of the United States.

Developed as a part of the Navy's program to save critical materials in the construction of its ships, the new board is made of compressed glass fibers treated with a binder. It is both light in weight and fireproof. On the service side, it is faced with incombustible glass fiber cloth, which is applied to the board with flameproof cement.

The board is secured with an adhesive to steel surfaces, which require both heat insulation and a durable finish of good appearance. Joints between individual boards are covered with glass fiber tape, and the entire surface is finished with lead and oil paint. In addition to being light in weight and incombustible, the board is rot-proof and vermin proof. It is unaffected by dampness or salt water, and the surface is easily cleanable.

The insulating value of the board is due to the millions of entrapped air cells, and to the fact that where the glass fibers cross and touch each other, they have exceedingly fine contact points, with the result that heat cannot pass readily from one fiber to another.

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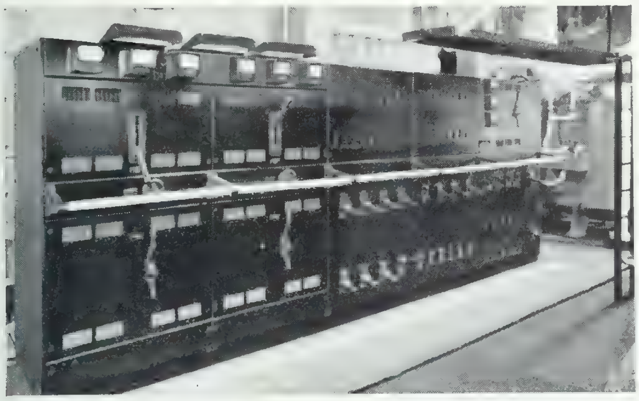

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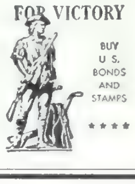
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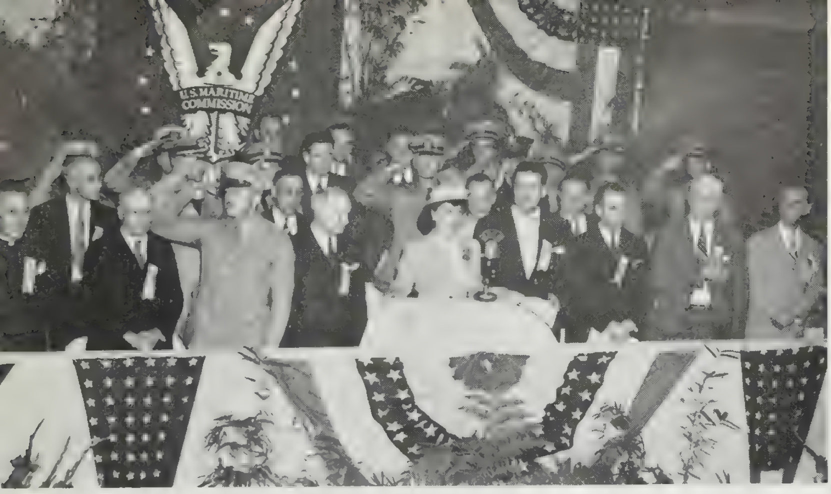

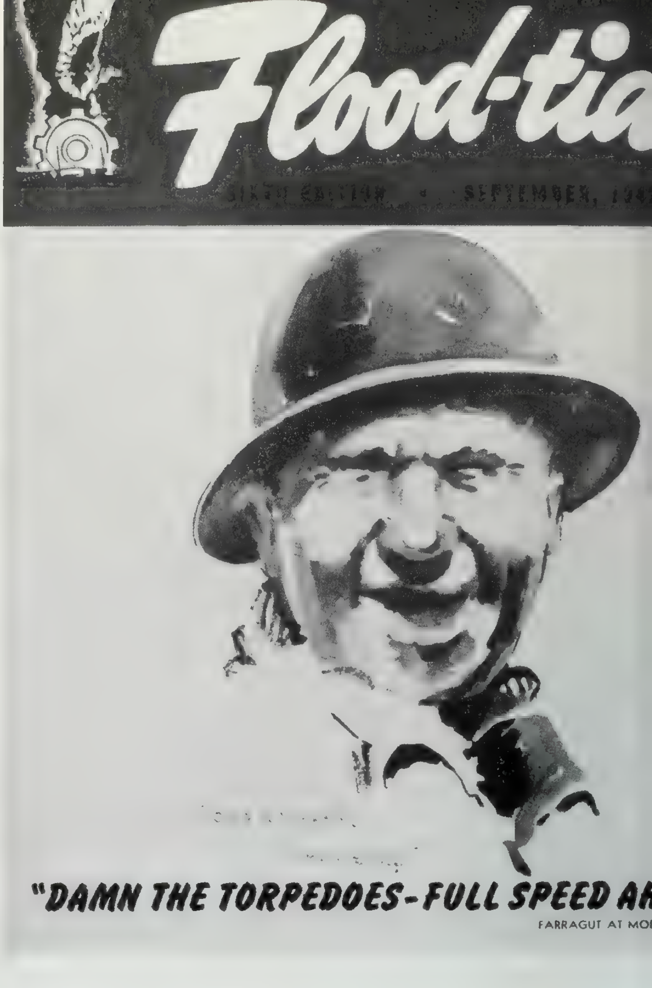

Flood-ti
SIXTH EDITION • SEPTEMBER, 194
"DAMN THE TORPEDOES-FULL SPEED AH
FARRAGUT AT MO

ABOVE: THE SPEAKERS' PLATFORM at the Kerotest "M" Award when the "Star Spangled Banner" was sung. E. G. Mueller, president of Kerotest, stands left of the singer.

RIGHT: PMR makes a bow to Editor C. E. "Chuck" Stanford, editor of Associated Shipbuilders' lively pictorial house organ FLOOD-TIDE. Attractive front cover of September edition is reproduced in our halftone.

Kerotest Receives Maritime Award

The first Pittsburgh district production award by the U. S. Maritime Commission was presented to the Kerotest Manufacturing Company, valve manufacturers, of this city, Saturday, August 29. Ceremonies were held in the company's newly completed building, and were broadcast over radio station KDKA.

Making the presentation of the award was C. E. Walsh, Jr., chief of the Commission's Procurement Division. The Maritime "M" Pennant and Victory Fleet flag were accepted on behalf of Kerotest employees by E. G. Mueller, Kerotest president. John Walters, chairman of the Employees Maritime Day Committee, accepted the Labor Merit Pins, given to all employees.

Following the presentation and acceptance speeches, Walter G. Swaney, general manager of the company, pledged that both labor and management would regard the awards as a spur toward greater production achievements. Acting as master of ceremonies was Ford Bond, ace NBC announcer from New York City.

BROOKS OPENS IN SEATTLE

Brooks Equipment Corporation of California has announced the opening of Seattle offices and stock rooms at 717 Second Avenue in Seattle, Washington.

States Charles E. Neal, sales manager of the Brooks firm: "The establishment of this office and the maintenance of adequate stocks of hinged shaft joints and universal joints and accessories will insure more personal contact with our customers, immediate deliveries when required, and a higher degree of efficiency and service in handling of your orders."

Robert S. Lamborn, formerly associated with the Moore Dry Dock Company at Oakland, is manager of the Seattle office. The company has plans under way, according to Mr. Neal, to open offices in Portland at an early date.

Main offices of the Brooks Equipment Corporation of California are located in the Sheldon Building, San Francisco. The Los Angeles branch is located at 736 E. Washington Boulevard and is under the management of H. J. Wright. In addition to the Hinged Shaft Joints and Universal Joints, the company also handles a complete line of fire control and protection equipment.

BROOKS' SEATTLE OFFICE

December, 1942

Pacific MARINE REVIEW

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FOR

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A Year Passes in Review

A year—perhaps the most vital in America's history—passes in review. From Pearl Harbor's December 7th to the Solomons of today has been a period of history making climaxes.

Early in this period was lost the most important source of supply for rope fiber, our own Philippines. Quickly, we warned rope users to carefully conserve as existing supplies were very limited.

Early, too, we began search for substitutes that might be used in place of Manila fiber. Several of these have been introduced and are giving satisfactory service.

VICTORY

However, substitutes too are scarce. Most of them must go into making rope for our Army, Navy and Merchant Marine.

There is *still* a vital rope shortage. As the year passes we ask you again, as we asked you at the year's start—take the best possible care of your rope to make it last longer.

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When Marine rope must be replaced VICTORY BRAND is the best possible substitute for Manila. Specially lubricated for water repellency.

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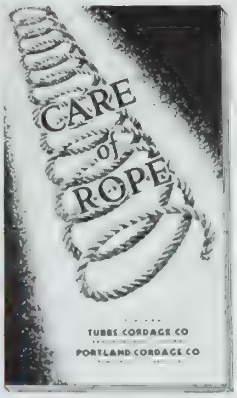

Send for this Free BOOKLET

giving you many helpful suggestions for making Marine rope last longer.

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Pacific MARINE REVIEW

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Official Organ
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Shipowners Association of the Pacific Coast

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President and Publisher

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★ "So to make your Manila rope go as far as possible, store it in a cool, dry, well-ventilated locker. Coil it loosely on cribs or racks away from steel decks, and away from radiators or steampipes. Keep paints and oils away. And always dry it thoroughly before storing.

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Advertisement No. 7 in a series offering suggestions to users of Columbian Rope. Send for Cap'n Mark's free booklet entitled: "Hints on Conserving Columbian Rope." It not only contains helpful information needed by every rope user but also shows the insignia of the Army, Navy and Marines.

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Pacific
MARINE
REVIEW

An Appreciation for
THE SHIPBUILDERS OF AMERICA

by Admiral William D. Leahy
Chief of Staff U. S. Navy

BELIEVE IT OR NOT, once upon a time, that now seems almost prehistoric, I was a marine engineer. That was in the forgotten days of the Battleship Oregon and the war with Spain—days of happy engineering practices, and of gentlemanly warfare — days that have gone forever.

Today, more than at any previous time, our naval architects and marine engineers are called upon to devise new methods of production and to design new types of ships — large airplane carriers, small carriers, escort vessels, landing boats, and numberless other special types necessitated by new demands of this war — all of which must come off the assembly lines with a timing almost equal to our boasted pre-war mass production of motor cars.

I personally believe that it is still possible to speed up our production in many categories by a simplification of both design and procedure, and I am sure this is now in process of being done on the shipways of America.

We know in considerable detail the remarkable accomplishments of the merchant shipbuilders, under the guidance of the president of this Society, Admiral "Jerry" Land.

Nothing like it has ever been done in the history of the world. This year's total of American shipbuilding will reach eight million deadweight tons, more than six times the production for the calendar year 1941.

In spite of disastrous submarine sinkings, the outstanding performance of the American merchant marine builders added to the smaller contributions from Canada and Great Britain has maintained our available tonnage afloat at a figure not too far below that of last January.

With sinkings now coming under better control, the hope is warranted that 1943, with the expected production of sixteen million or more deadweight tons, will give us a badly-needed increased margin to meet the vast needs of a war fought thousands of miles away from our own shores.

Comparatively little has been disclosed of the results achieved by our yards engaged in naval shipbuilding. Their product must not only make up the wastage of a bitter war of attrition, but also must give us the superiority necessary to defeat the navies of powerful determined and aggressive enemies to the east and to the west of us.

Builders of our modern destroyers have reduced the time of their construction from the eighteen months required under pre-war conditions, to six months and less;

our airplane carriers are now building in seventeen months, where the best pre-war record was practically double that time; battleships are being built in about three years, instead of the five years required before the war, and submarines that took double that time under normal conditions are turned out in a little over a year.

Nothing but the superb skill and all-out effort of naval shipbuilders could have expanded their yards to meet the greatly increased volume of the Navy's needs, and at the same time cut production records to this truly unbelievable extent.

This has been accomplished in the face of material shortages, lack of experienced workmen, loss of men due to the draft and to enlistment, innumerable changes to meet new demands—the result of war experiences, all of which retarding influences have been overcome, making this record one that should be recognized with heartfelt appreciation by our citizens.

Time does not permit mentioning all of the splendid Americans whose names are on the roster of those entitled to the country's gratitude, but to a few of them with whom I have worked through many years of contributing my small part in the effort, I must pay individual tribute.

To Homer Ferguson, president of the Newport News Shipbuilding and Dry Dock Company, the dean of American shipbuilders, and his able staff to whom the Navy has always turned in time of need, and who have never failed us.

To "Jack" Metten, vice chairman of the Board of the New York Shipbuilding Corporation, and your incoming president, the leading American marine engineer, and a fine executive head of a 30,000-man business, and his capable assistance, whose ships have always performed.

To Lynn Korndorff, president of the Federal Shipbuilding and Dry Dock Co., who, with the aid of a group of experienced and energetic men that surround him, has reduced repetitive destroyer building to a science.

To Arthur Homer, vice president of the Bethlehem Steel Company; and William Collins, manager of the great plant at Quincy, Massachusetts, who head an organization that is in the van of naval shipbuilders; and to "Pete" Newell, whose small unit for destroyer construction has grown to a large producing yard, that will soon give us two vessels a month.

There are too many other builders of naval ships for me to call them all by name, but they share, nonetheless, in the distinction of great accomplishment, and they deserve the same grateful acknowledgement of excellence in providing their country's sea defenses.

For the builders of merchant ships, the name of Henry Kaiser has become a byword, as has that of "Jack" Willis, the head of Bethlehem Steel Company's largest merchant shipbuilding yard, and a dozen other national figures in this industry to whom the gratitude of America is equally due.

The Navy program has been guided to its present stage of successful accomplishment by Vice Admiral S. M. Robinson, Rear Admirals A. H. Van Keuren and C. A. Jones. No more able, energetic, brave and forceful men ever wore the country's uniform or ever took greater risks as Government representatives to insure the advancement of our naval shipbuilding.

That the same is true of Admiral Emory S. Land and of Admiral Howard Vickery for the merchant marine program, goes without saying. These "salty" admirals are national characters, known to everybody in America for their superlative accomplishments.

All of these men whom I have named and the scores of others with their top assistants are outstanding examples of the best that any industry could offer to its country in time of national stress. The works and reputations of all these fine Americans will live after them. Without their able help in producing efficient tools for us sailormen, the future of our world would be black indeed.

That we will be victorious, we do not doubt. And, speaking for the men who must use and depend upon the ships that you are giving us, I greet you tonight for all the Navy as brothers in arms, and wish you the highest success and a fully-earned personal satisfaction in the accomplishment of your unending effort.

As our fathers did for us—we—working all together will make America safe for our children.

Extract from address at the annual dinner of the Society of Naval Architects and Marine Engineers, New York, Nov. 13, 1942.

The Modern Neptune

THE OFFICE OF PUBLIC Relations, Twelfth Naval District, has recently broadcast a release containing an official Pacific Fleet notice written in the form of a memorandum from King Neptune to the destroyer screen of that fleet, written by the King's secretary, Davy Jones, and forwarded to the fleet by its Commander-in-Chief.

This memorandum is full of very excellent suggestions for destroyer screen officers—suggestions that are basic in sea discipline and morale aboard ship—suggestions that are equally valuable for merchant marine officers.

Following is the memorandum in full:

1. On this occasion of your nth crossing of the Equator, I want to wish all hands a round trip. To achieve a successful round trip may not be too easy. From what I read in the papers, I believe the area where you are going is lousy with Jap submarines and small torpedo boats, in addition to a battleship or cruiser here and there. These little fellows have done and will do their dirty work at night. The only offense against them is prayer and you. The big ships will do the praying which leaves you to do the work. To sink them you must find them in the dark. You have sound, radar, and lookouts. All three of these can be just as good or just as bad as you make them. You may still have a few days to work on it, and I offer the following suggestions, hoping you have already carried them out.

2. You can't make a soundman listen, or a lookout look, or a radarman radiate information by getting tough or putting him on the report. You've got to instil morale—an eager desire to do the job not well but perfectly. To this end, the captain and officers must camp on their trail—explain, discuss, persuade, cajole, practice, test, teach, check and double check. Tell them about the little orphans back home who'll never say Daddy, if he doesn't keep on his toes. If you haven't any youngsters, tell them about mine—and those who'll never be born, for lack of a father. Instead of having the Captain, Navigator, Officer of the Deck, and Junior O.O.D. all demanding the range and bearing of an aircraft carrier, let one of them keep demanding the range and bearing of something else—even a pixie. Anybody can recognize an aircraft carrier. These people should be drilled, trained, exercised, and urged, 24 hours a day. You have enough officers on watch to do it, and it may prevent your wife from squandering your insurance on gew-gaws and bric-a-brac.

Davy Jones,
By direction,
C. W. NIMITZ."

W. S. A. Advertising Policy

IN RESPONSE TO a resolution adopted by the recent Propeller Club convention and forwarded to the U. S. Maritime Commission, Admiral Emory S. Land, War Shipping Administrator prepared and syndicated a statement of which the following is an abstract:

The American Merchant Marine is operated by steamship lines acting as agents for the War Shipping Administration. Under the service agreements with such agents, advertising expense is not classified as part of **operating** expense. It is, therefore, allowable as an **overhead** expense.

In determining fair and reasonable overhead expenses, the Administrator will be inclined to be guided by the policy recently enunciated by the Joint Price Adjustment Board (War, Navy, Maritime) with respect to advertising expense.

This policy in brief provides that advertising expenditures of corporations substantially engaged in the war effort will be deemed reasonable by Governmental Price Adjustment agencies when reviewing overall corporate profits, providing such expenses are ordinary, necessary and bear a reasonable relationship to the corporation's business activities.

HULL 440 IS STARTED with the laying of the keel. Clay Bedford, general manager of Richmondship, wishes J. C. McFarland "Good Luck."

7-DAY SHIP

RICHMOND NO. 2 SETS WORLD LIBERTY RECORD

ON THURSDAY, November 12, 3:30 p. m., in Richmond Shipyard Number Two, Hull No. 440 on Way No. 1 was christened Robert E. Peary, and slid into the waters of Richmond Harbor just four days, 15 hours, and 29 minutes from the laying of her keel. She was ready for delivery two days, 23 hours later at 2:30 p. m. on Sunday the 15th of November, making a total elapsed time of 7 days, 14 hours and 29 minutes from keel laying to complete ship.

This is the most remarkable performance in the present gigantic American shipbuilding effort and in many ways sets new milestones in the history of shipbuilding technology. It is important, therefore, that the industry know just how this record was made. Fortunately, Clay Bedford, general manager of the Richmond Shipyards, is a man who believes in complete frankness. In the November 12th issue of Fore'n'Aft, house organ of the Richmond Shipyards, the facts are recited with considerable detail. From this magazine, we have reproduced the graphs which form part of the illustrations used with this article.

In all of the shipyards that are operated by the Henry J. Kaiser organization, every employee is encouraged to turn in suggestions—ideas—kinks—for speeding up any process, or in any way saving time and material. In August of this year, Richmond Yard Number Two launched a (then) record ship, their Hull No. 72, just 24 days after keel laying. The record shows that on the 16 ships preceding No. 72, the average time, keel laying to launching, was 57 days per hull, as compared with a 42-day average for the 16 ships following No. 72. These figures indicated that some very helpful lessons had been learned in producing this record.

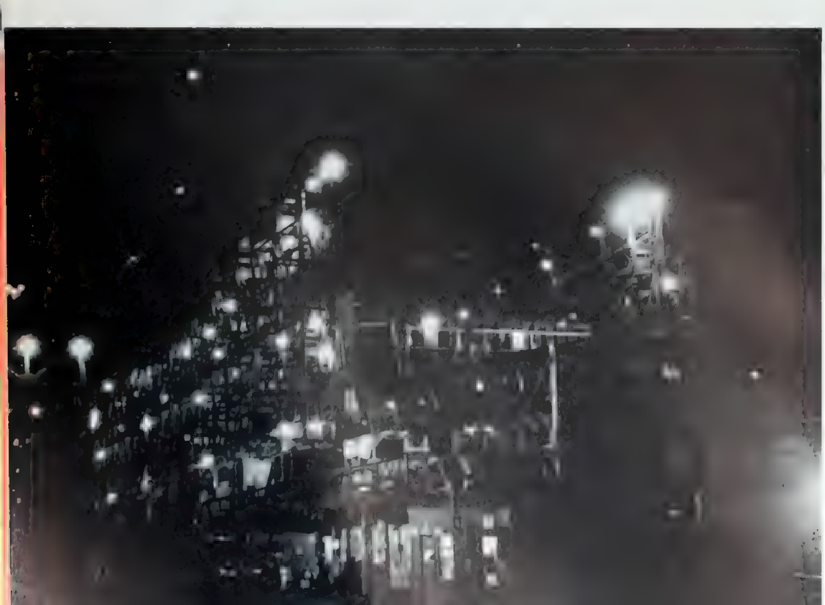
Then in October came the world-startling record of ten days, keel laying to launching, made by the Oregon Shipbuilding Corporation, also a Kaiser yard. This record also brought out a large number of new ideas, and set the creative ingenuity of shipbuilders working overtime.

Clay Bedford put it up to the employees of Richmond Shipyards, "Have we got what it takes to beat this record? Can we cut down our average time? Can we produce more ships each month?"

The answers came in by the hundreds—suggestions, jigs, rigs, gadgets, devices, constructive criticism. No punches were pulled. Every craft was represented. Summed up, these answers said:

"You get parts and equipment into the plant, prefabricate and preassemble the sections—call for volunteers—give us the tools—we will do the job!"

Out of the mass of ideas, the planners chose the best and combined these with the best established practice. Reduced to simple language, the final plan was simply to prefabricate and preassemble in large sections as much of the ship as possible and to have these sections ready and located



TEAMWORK brought this hull shaping upwards in less than 24 hours.

so that they could flow into the hull erection with the least possible movement and in an exact, predetermined sequence, calculated for welding and riveting the sections into the hull with the least liability of producing distortion or locked in stresses. This yard has from the start of its first ship practiced prefabrication and preassembly of large sections of ships' hulls. The lessons learned in making former records enabled improvement of the preassembly practice in three ways:

(1) The making of larger preassembled sections;

(2) More complete outfitting of the preassemblies before erection; and

(3) Better design of preassembly details to reduce the time required for spotting them in position and welding them into the hull erection.

All the best ideas along these lines were incorporated into the planning of the preassemblies for Hull 440.

WORLD'S RECORD-BREAKING LAUNCHING

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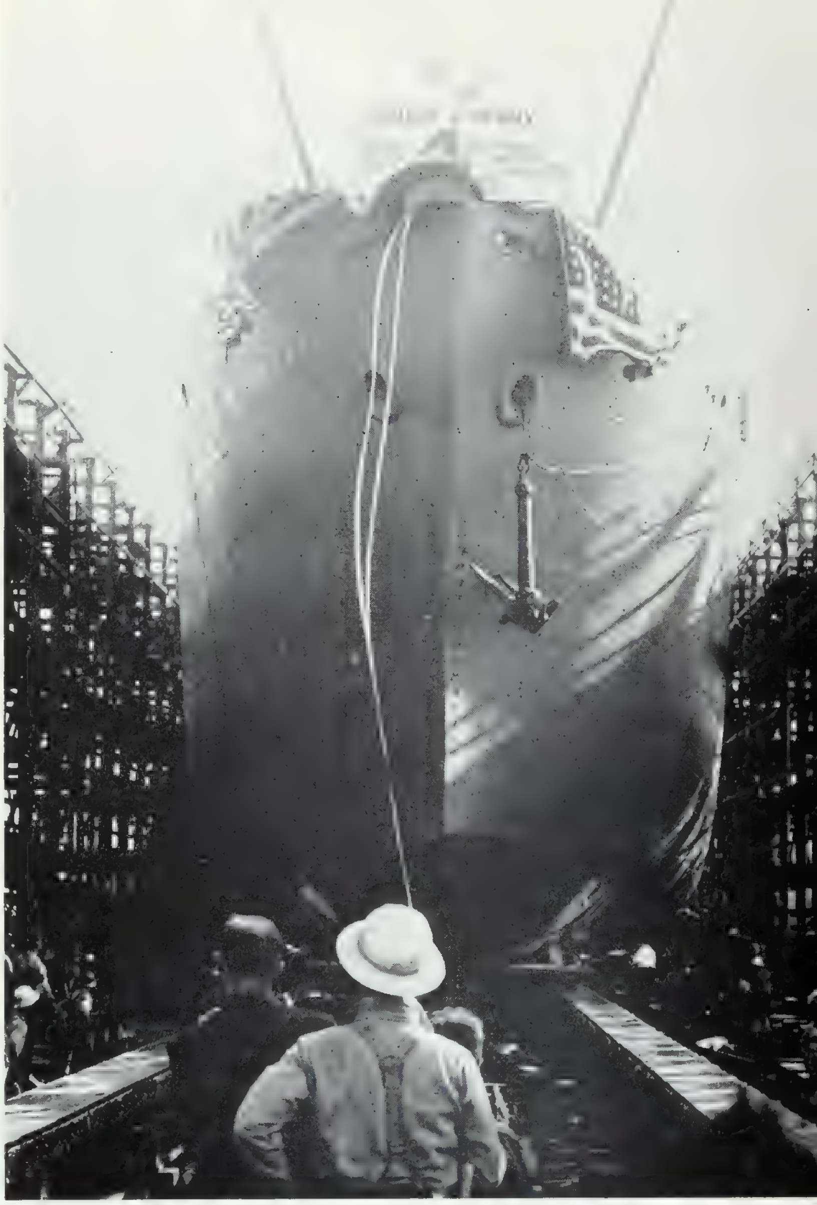
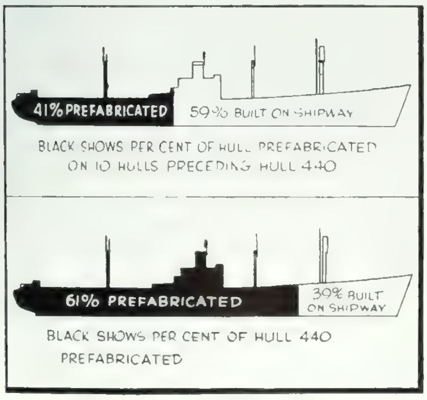


The S. S. Robert E. Peary (Hull 440) slides down the ways 4 days, 15 hours, 26 minutes after keel laying.

The time set for the start of operations on the shipbuilding way was 12:01 Sunday morning, November 8. By that time, preassembly sections for the entire hull were finished and stored conveniently and in proper sequence adjacent to the building way. For instance, the entire after peak section with stern frame welded in place, was spotted at the foot of the building slip within a few inches of its exact location some minutes before the start.

A good instance of the greater lengths to which preassembly was carried in this hull is found in the keel laying. The keel plates were already welded into large sections of the complete outer bottom shell. Six of these sections made up the entire outer bottom plating, including the keel.


41% PREFABRICATED
59% BUILT ON SHIPWAY
BLACK SHOWS PER CENT OF HULL PREFABRICATED ON 10 HULLS PRECEDING HULL 440
61% PREFABRICATED
39% BUILT ON SHIPWAY
BLACK SHOWS PER CENT OF HULL 440 PREFABRICATED

So at 12:01 that Sunday morning, they laid not a piece of keel plate but a huge section of the outer bottom. By 2:00 a. m. that day, the inner bottom sections, amidships, three transverse bulkheads, the midships' side shell sections, two boilers, and the entire engine assembly were in place in the hull. At midnight Sunday, nearly 1500 tons (more than one-half of the total) hull steel had been erected, and more than 18,000 feet of welding had been done.

Sections of double bottoms were made up with all piping in place and with all structural members permanently welded in place. Five of these sections completed the double bottom. The largest weighed 110 tons. These sections had all structural members for foundations of main and auxiliary machinery already in place.

Such assemblies as the fore peak and after peak were watertight, welded and ready for testing when spotted for erection in the hull.

Deck sections were made up complete on the assembly racks, with winch foundations, hatch coamings and fittings, and steam piping all in place. Seven such sections plus the deck sections incorporated with the deck house assemblies completed the main deck.

In the total erection, including approximately 250,000 items, only 97 preassembled sections were required to finish the ship.

By the time the first section of 440's bottom shell was laid on the keel blocks, 152,000 feet of welding had been finished in the pre-

PROGRESS OF RECORD LIBERTY PRODUCTION

HULL 440 *takes shape*

NOVEMBER 8

12:01 A. M., NOVEMBER 8 (upper left): Lowering the first keel section, and Hull 440 is on its way to a world's record.

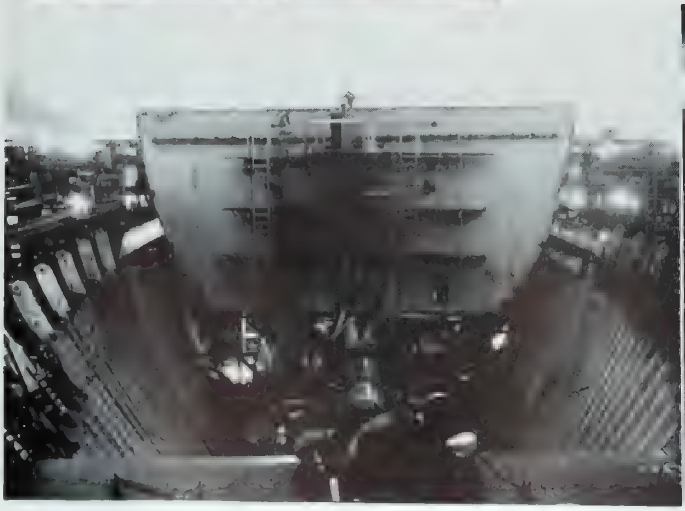
1:00 A. M. (upper right): The anxious welders start their first welding on the keel plate sections.

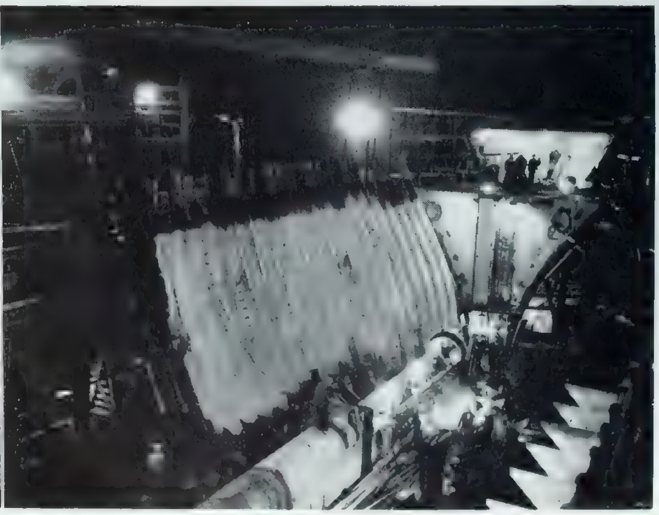
2:15 P. M. (center): According to schedule, the engine is placed in the hull.

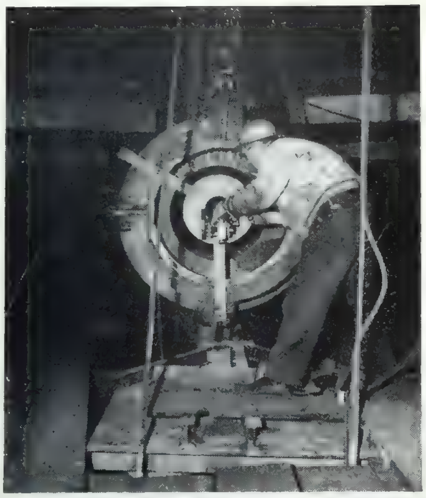
NOVEMBER 9

5:15 A. M. (lower right): Placement of stern side shell assembly with shaft alley and after peak section in place.

7:30 A. M. (lower left): Lowering a transverse bulkhead.



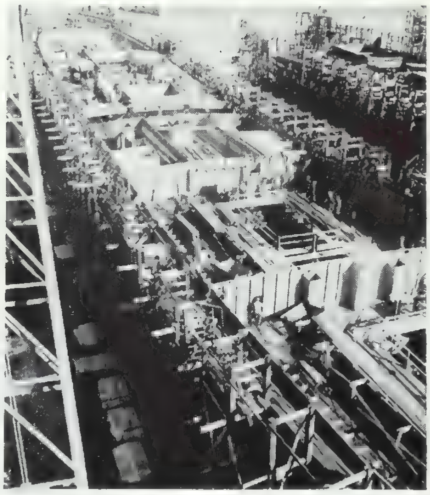




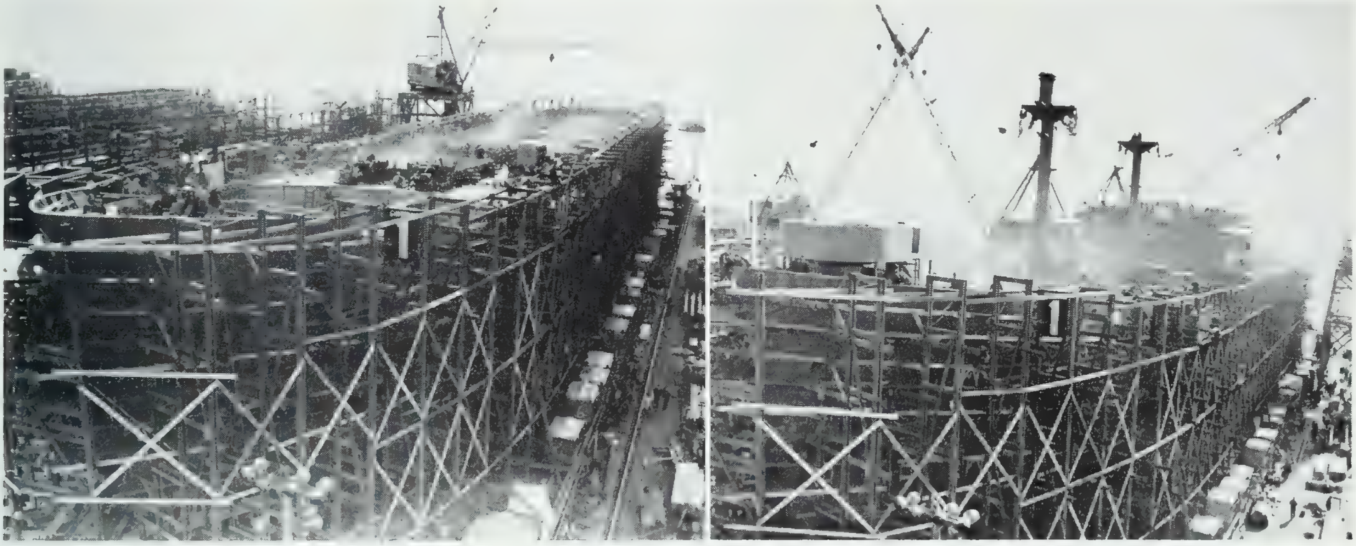
3:00 A. M., NOVEMBER 10: Stern frame being prepared for boring.

NOVEMBER 10-11

HULL 440 GETS INTO READINESS FOR LAUNCHING

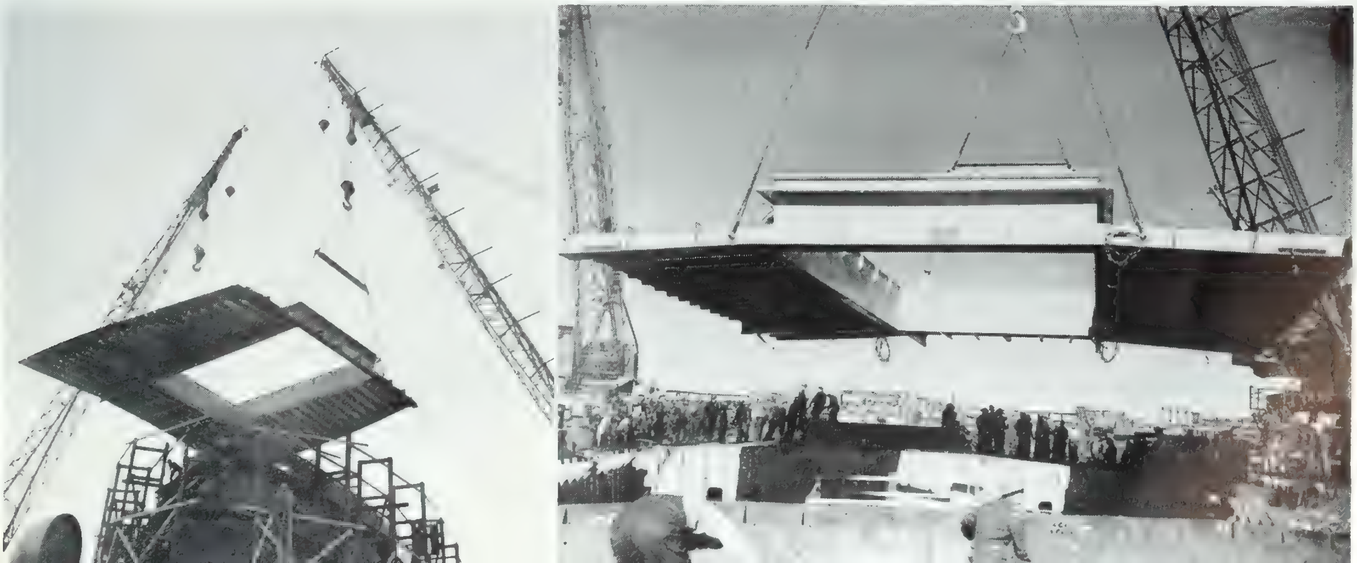


11:00 A. M., NOVEMBER 10: General view of main deck 59 hours after keel laying.

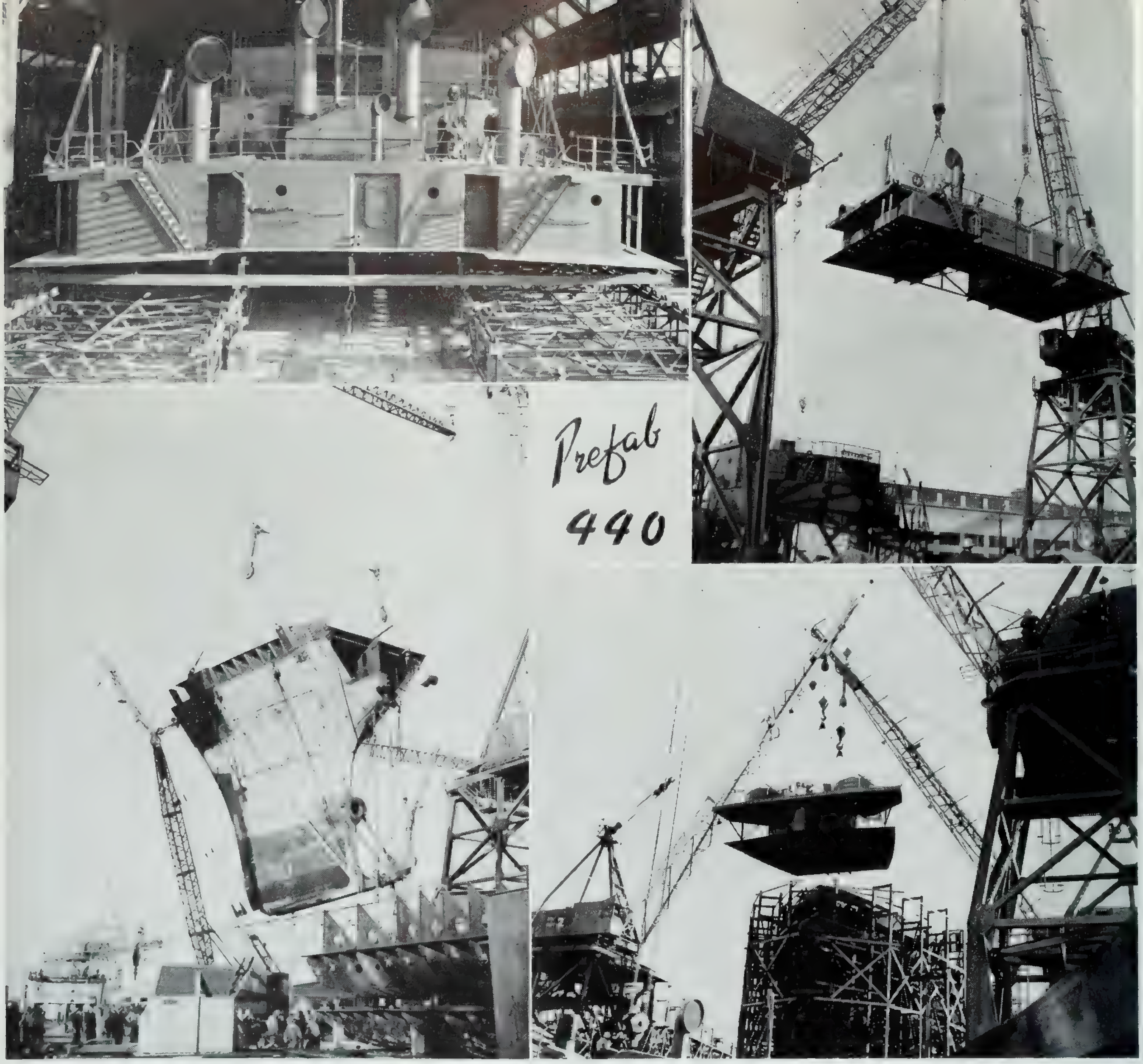


COMPARISON OF PROGRESS in 25 hours is seen in these two views, taken from the identical position. The view on the left was taken at 11:00 A. M., November 10; the one on the right, 12:00 noon, November 11.

A DECK SECTION (left) is lifted up by two huge cranes and brought into place (right) where workers are ready to secure it in position. (November 10.)



Prefab 440



PREASSEMBLY is an art at Richmondship, and the timing worked out in advance on prefabrication kept the assembly of Hull 440 moving according to schedule. The deck house (upper left) is completed in the prefab shop and then moved by sections (upper right) to the building ways. Lower left: the after peak assembly is ready to be placed into position on the hull. Lower right: Lifting after deck house assembly.

ALSO COMPLETED IN THE PREFAB SHOP are the crew's quarters and the mess room as shown in these photos.

assemblies, leaving 57,800 feet to be welded on the ways. Of the 23,095 rivets driven in the complete hull, 80 per cent had been clinched in the preassemblies before the keel was laid.

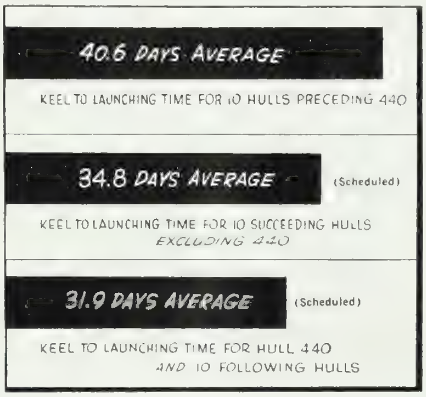
The big 2500 ihp triple-expansion engine that drives the propeller was in place on its foundations in the hull structure less than 12 hours after keel laying, and was connected and ready to turn over less than 48 hours after being lowered into the hull.

Throughout the 111½ hectic hours of erection, the hundreds of workers in various crafts adhered practically 100 per cent to a prearranged planned-to-the-minute schedule.

The last large section, a midship deck house unit, weighing 84 tons, was spotted in position at 9:30 p. m. Tuesday, and by midnight of that day, steel erection was practically complete, three days after keel laying. In the preassembled deck house sections, each item of equipment that is intended to be fastened to the hull is installed in the preassembly shop. This includes mirrors, instruments of all kinds, steering gear controls, radio equipment, all joiner work and furniture, windows, port lights, wiring, piping, ventilation fans and ducts. In fact, the deck house is a finished unit, needing only to be spotted on and welded to the ship's hull and connected up to the lighting, power, heating, ventilating and water systems of the hull.

FORE PEAK SECTION on trailer ready to be placed into position on the hull.

Immediately after launching, Robert E. Peary was shunted to the outfitting dock. She was estimated to be 91 per cent complete. The finishing touches plus a six-hour full power dock trial, stocking of final stores and final paint coat and clean up consumed two days, 23 hours, another record-smashing performance.

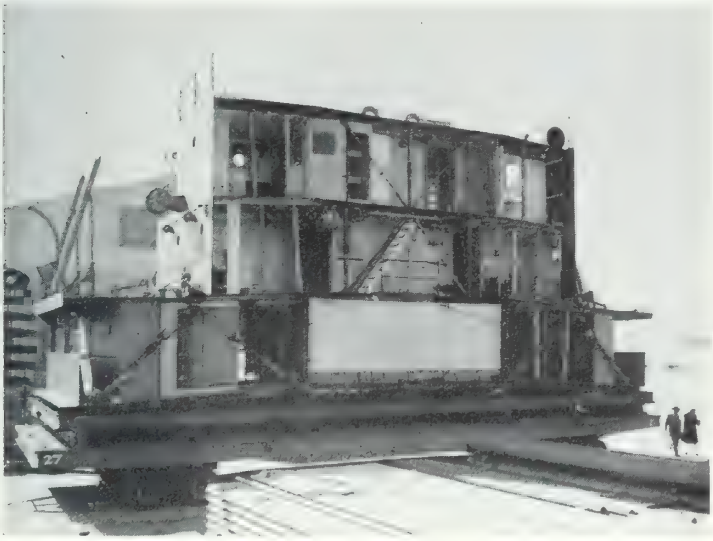


So Hull 440, now S.S. Robert E. Peary, has been completed in seven days, 14 hours and nine minutes from keel laying. The Maritime Commission, however, insisted on a triple check on all hull and machinery features, and that took another 24 hours. (This also, by the way, is something of a record performance for Federal inspection.)

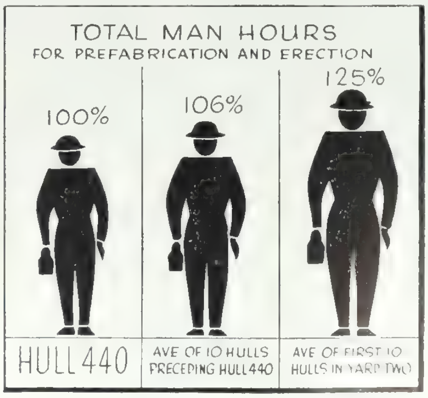
So in the afternoon of Monday the 16th of November, S.S. Robert E. Peary steamed down the Bay and took her place in the great fleet of freighters.

Referring to the graphs, we get the rather startling fact that this record shipbuilding feat was so well planned and so smoothly executed that the total number of man hours, including fabrication, preassembly, erection and outfitting, was a little under six per cent less than had been taken on the ten previous ships delivered from the yard.

The graph showing the improvement in average days, keel laying to launching for Richmond Shipyard Number Two, indicates that early in 1943, we may expect to see this yard delivering Liberties at a regular rate of one ship per month from each building slip.



THIRD DECK HOUSE section being moved on trailer from prefab to the hull.



John F. Metten, New President, Society Naval Architects and Marine Engineers.

WITH THE SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS

AT THE FIFTIETH ANNUAL MEETING

On NOVEMBER 12, Rear Admiral Emory S. Land, chairman U. S. Maritime Commission, and president of the Society of Naval Architects and Marine Engineers, opened the 50th Annual Meeting of this organization with a ringing assurance that the shipbuilders of America would meet and exceed the tremendous 1942 and 1943 quotas of merchant and naval tonnage set for them by the stern necessities of global war. The Society meeting drew out the largest registration of any in their history and the attendance on technical sessions was large and enthusiastic.

Admiral Land reported for the Maritime Commission that to date, since their program started in 1937, they had ordered more than 2800 vessels of all types, exclusive of those built on private order or for the British Government in American shipyards. Shipyard facilities had increased over 600 per cent. More than 800 industrial plants outside shipyards are engaged in this program, and in these plants and the shipyards, nearly 2,000,000 persons are employed.

During 1942 the yards building the EC 2 (Liberty) type steamer have reduced the hull assembly time from an average of 149 days in March to an average of 48.5 days in October (keel laying to launching), and the outfitting time (launching to delivery) from an average of 78.8 days to an average of 15.9 days. So that October average time keel laying to delivery for the Liberty ship was 64.4 days.

Six million deadweight tons of the total had been delivered to the Commission by November first. Whereas only 16 ships were delivered in January, 1942, September saw the delivery of 93.

The admiral declared that the technical division of the Commission is designing a larger Liberty type of greater speed and with better structure for gun mounts. This new design may be in production during 1943 in place of the present Liberty type.

Reporting for the Navy program, Admiral Land disclosed that during the twelve months ending October 1, 1942, naval construction rose from 1320 vessels at the beginning of the period to 14,192 at its end. In addition, 210 vessels were undergoing conversion on October 1.

In 1941 the average yard took around 15 months to build a destroyer. In 1942 several destroyer building yards have produced these highly complicated units in less than seven months. All types of naval vessels are being completed and delivered months ahead of schedule.

The New President

John Farrell Metten, vice chairman of the New York Shipbuilding Corporation and formerly president of that company in Camden, N. J., was elected president of the Society. Mr. Metten, born in Kent County, Delaware, on December 15, 1873, was the recipient of the honorary degree of Doctor of Engineering from Lehigh University in 1928; became a machinist and draftsman at the Newport News Shipbuilding & Dry Dock Company, Newport News, Va.; was successively chief draftsman, chief engineer and vice president of the William Cramp & Sons Ship & Engine Building Company, Philadelphia, Pa.; was selected by the Navy and private shipyards to undertake standardization of design for naval construction and actively directed the design of the six Pensacola class cruisers; and became vice president of the New York Shipbuilding Corporation in full charge of hull and machinery design. He holds numerous active patents on turbine design, propulsion machinery and auxiliaries. In 1940 he was awarded the David W. Taylor gold medal, the highest award of the Society of Naval Architects and Marine Engineers. Mr. Metten will take over his new duties as president of the Society on January 1.

Land Honored

At the conclusion of the Technical Meeting, Rear Admiral Emory S. Land, president of the Society, was elected an honorary member. Other officers elected include: J. H. King, manager of the Marine

Department of Babcock & Wilcox Co., secretary and treasurer; Arlo Wilson, assistant secretary; C. W. Middleton, vice president of Babcock & Wilcox Company, assistant treasurer; and Howard H. Brown, editor of Marine Engineering & Shipping Review, editor.

Council members representing members and associate members elected at this time include: James B. Hunter, naval architect of the Bethlehem Steel Company, Shipbuilding Division, Fore River Yard, Quincy, Mass.; Professor Henry H. W. Keith, head of the Department of Naval Architecture in Marine Engineering, Massachusetts Institute of Technology, Cambridge, Mass.; John F. Nichols, director of engineering, Newport News Shipbuilding & Dry Dock Company, Newport News, Va.; Capt. Harold E. Saunders, U.S.N., technical director, The David W. Taylor Model Basin, Bureau of Ships, Navy Department, Washington, D. C.; Sidney A. Vincent, naval architect, Newport News Shipbuilding & Dry Dock Company, Newport News, Va.; and Rear Admiral Alexander H. Van Keuren, chief of the Bureau of Ships, Navy Department, Washington, D. C.

Council members representing associates elected were: Walter C. Hemingway, vice president and general manager of the Federal Shipbuilding & Dry Dock Co., Kearny, N. J.; Harold S. Falk, president of the Falk Corporation, Milwaukee, Wisc.; and Harry V. Petersen, general sales manager of the DeLaval Steam Turbine Co., Trenton, N. J.

Medal to Robinson

At the annual banquet of the Society, held in the Grand Ballroom of the Waldorf-Astoria Hotel, Friday night, Vice Admiral Samuel Murray Robinson, U.S.N., was awarded the David W. Taylor gold medal, the highest award of the Society of Naval Architects and Marine Engineers, for notable achievement in marine engineering. Admiral Robinson, born in Eulogy, Texas, August 13, 1882, was appointed to the U. S. Naval Academy in 1899, graduating in 1903, and completed the U. S. Naval Academy postgraduate course in Marine Engineering in 1911; carried on an extensive research in propeller design; was the author of an authoritative book on this subject; was instrumental in the development of electric propulsion, served four years in the Design Division of the Bureau of Engineering as head of the Capital Ship Section; was two years Fleet Engineer of the Pacific Fleet; was successively assistant head, Bureau of Engineering and head of the Design Division; and was engineer-in-chief and chief of the Bureau of Engineering. He initiated and directed outstanding advances in ship propulsion and design, including the use of higher steam pressures and temperatures and the development of high-speed diesel engines for submarines.

RETIRING PRESIDENT Rear Admiral Land congratulating incoming President John F. Metten.

TECHNICAL SESSION

The technical program brought out nine very fine papers covering a wide variety of subjects ranging from "Side Launching on the Great Lakes" to "Boiler Control."

We herewith present thumbnail abstracts of these papers in the order of their presentation.

(1) "Side Launching on the Great Lakes — Model Experiments and Practices" by James H. Fahey

Mr. Fahey is a graduate of the University of Michigan, B. S. in Naval Architecture and Marine Engineering, class of 1940, and is now hull engineer, Manitowoc Shipbuilding Company, Manitowoc, Wisconsin. The paper recites and illustrates the history of side launching at the Manitowoc Shipbuilding Company, and it details the present practice—the result of 50 years' experience.

Most interesting is the account of a tank model experimental launching of a submarine. This experiment was undertaken to demonstrate the practicality of side launching for the submarine form.

The model used was 13 feet long and had a displacement of 175 pounds in launching condition. The experimental set-up was arranged so that considerable variation could be made in several governing factors. As a test of the model technique, careful motion

Vice Admiral Samuel M. Robinson, Taylor Gold Medallist.

pictures were made of an actual side launching of a small vessel and then an accurate model of that vessel was launched from the experimental set-up. The results gave a very close comparison and were considered satisfactory.

Conditions in the tank were made to simulate as closely as possible those of the river bottom at the ways. The model was launched at various inclinations of ways and under widely varying conditions. From the data obtained, the best conditions for the launching of the submarine were calculated and the actual launching of that vessel reproduced the predicted results with remarkable accuracy.

(2) "Use of High Elastic Steel in Ship Construction" by Edgar P. Trask.

Mr. Trask is an experienced ship designer now with Gibbs and Cox of New York.

His paper is an exploration of "the possibility of further reducing the weight of ships' hulls by the use of high elastic steel without sacrifice of strength, rigidity, and durability." The specifications for "ordinary hull steel have remained unchanged for about fifty years," and weight reduction during that time has been "by better disposition of material and the greatly extended use of welding, which seems likely to replace riveting entirely."

The author proposes a steel of the properties shown in Table I in comparison with present ship steel. In consideration of these properties, he proposes for this steel a 20 per cent increase in allowable working stress. He works out a 16,765-total-dwt tanker design reducing most of the structural members 10 to 15 per cent in thickness, making a saving in steel of 425 tons. On the same draft, she could carry 380 more dwt. The high elastic steel ship would cost $36,400 more than the mild steel ship (estimated) but would earn $18,000 a year (estimated) additional income.

Table I.—Physical Properties of Proposed High Elastic Steel, Together with Similar Properties of Steel Now Required for Shipbuilding

	Present	Proposed
Average ultimate psi	65,000	72,500
Yield point, psi	32,500	50,000
Endurance limit, psi	25,000- 27,000	48,000- 50,000
Yield point, per cent of ultimate	50	69
Proportional limit, psi	25,000	35,000
Proportional limit, per cent of ultimate	38.5	48.3
Proportional limit, per cent of yield point	77	70
Per cent elongation in 8 in. (1,500,000/ultimate)	23.1	20.7
Corrosion resistance in the same time, per cent	100	200

Similar comparisons are worked out for an intermediate type liner.

Author concludes: "With a predicted addition of 15 per cent of the ordinary annual earnings of a tanker due to greater carrying capacity (full cargoes are the rule in the tanker trade), and with a predicted addition of 6 per cent or over of the regular earnings of an intermediate liner or cabin class ship due to reduced power required and the accompanying fuel saving, there would seem to be evidence of a field for further study and the development of actual data as to the attainments of these benefits.

"The gains from the use of such a steel will increase with the speed of the ship and also with the length of the voyage. While the likelihood of building superliners is very remote, this type and the cross-channel type of ship, each having high speed-length ratios, would seem to offer in the merchant marine the greatest opportunity for savings."

(3) "Effect of Size of Towing Tank on Model Resistance" by John P. Comstock and C. H. Hancock.

These authors are, respectively, assistant naval architect and chief of Hydraulic Laboratory, Newport News Shipbuilding and Dry Dock Company.

The paper describes and gives plotted results of a series of experiments at the Newport News towing tank, with the object of determining how large a model could be towed in that tank without "wall effect" and what resistance should be expected if that size were exceeded. The tank has a depth of 4 feet and a width of 8 feet.

The results indicate: "That the required breadth is more nearly a function of the beam or of the cube root of the volume of displacement than of any of the other dimensions, and, at least up to a speed-length ratio of 1, does not increase in proportion to speed-length ratio. A breadth of tank of between 10 and 15 model beams, or about 1.5 to 2 model lengths, appears to be required for speed-length ratios between 0.5 and 1, while a breadth that can only be estimated, but is apparently about 50 beams or 5 model lengths, may be required for a speed-length ratio of 2.

"The required depth of water may be expressed with about equal accuracy for speed-length ratios below unity as 0.75 model lengths, 9 times the square root of the midship section area, or 4 times the cube root of the displacement volume. It is not a consistent function of the draft, and does not increase in proportion to the speed-length ratio. Measurable increase in resistance appears at depths greater than 10 times the product of draft and speed-length ratio. At speed-length ratios of about 2, the required depth of water may be from 1.5 to 2 model lengths."

(4) "Model Making as an Aid to Shipbuilding and Planning" by S. B. Besse.

Mr. Besse is in the Steel Hull Division, Newport News Shipbuilding and Dry Dock Company.

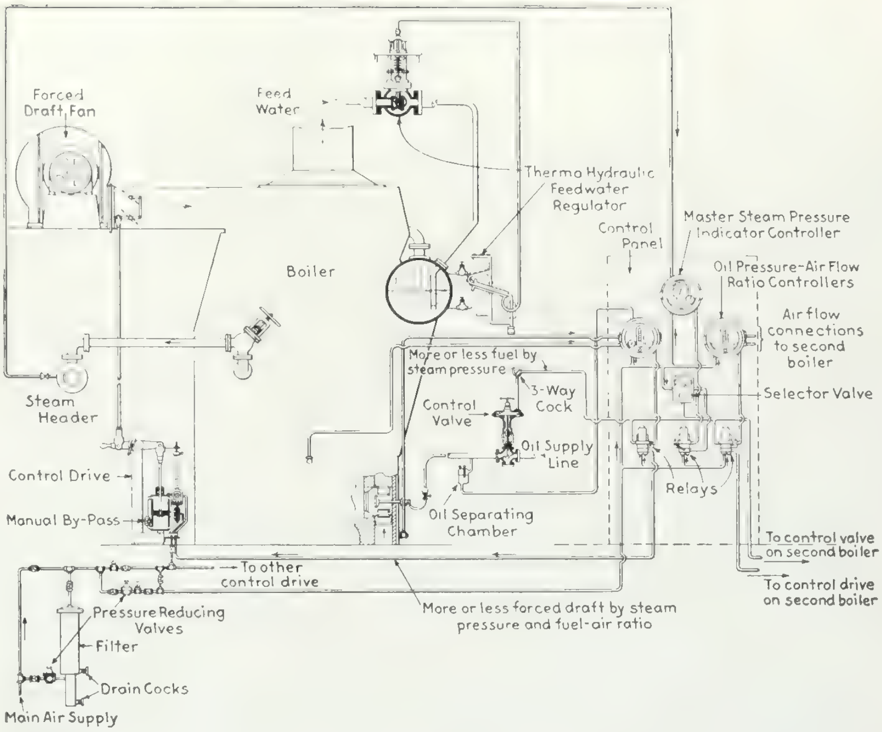
Models are being much more used in the modern American technique of shipbuilding than ever before in the history of the art. This paper describes the methods used in the model shop at Newport News, and shows how models of various parts of the vessel aid inexperienced and skilled craftsmen alike in understanding the ship's structure and in fabrication and production of its various parts.

Author concludes: "That the model is a valuable aid to the shipbuilder is not disputed. However, in order to derive the most from the model the work must be carried out as economically and as quickly as possible. With technical models that are to be tested the scale must be kept as large as possible, to keep the measurable forces within reasonable bounds.

"Arrangement models, to be of the greatest value, must necessarily be constructed along with the drawings. In order to justify the shop expense, the models built for planning purposes, as well as any other types, must be built accurately with as little detail as possible and still serve their purpose, and, above all, without the finish that is customarily expected on the exhibition model. Under these terms any shipbuilder who does any amount of research work and who has any volume of work under construction should find that the relatively small expense of a model shop is not only indispensable but a very sound investment."

(5) **"Boiler Control" by E. G. Bailey and P. S. Dickey,** respectively president and director of research, Bailey Meter Company.

With particular reference to marine boilers, this paper: describes automatic combustion control and metering devices; recites the benefits derived by their use on various installations; discusses the added safety given by these controls; and indicates their relationship to other plant equipment.


Forced Draft Fan
Feed Water
Thermo Hydraulic Feedwater Regulator
Control Panel
Master Steam Pressure Indicator Controller
Oil Pressure-Air Flow Ratio Controllers
Air flow connections to second boiler
Boiler
More or less fuel by steam pressure
3-Way Cock
Selector Valve
Steam Header
Control Valve
Oil Supply Line
Control Drive
Relays
Oil Separating Chamber
Manual By-Pass
To control valve on second boiler
To other control drive
To control drive on second boiler
Pressure Reducing Valves
More or less forced draft by steam pressure and fuel-air ratio
Filter
Drain Cocks
Main Air Supply

COMBUSTION AND FEED WATER CONTROLS, U. S. MARITIME COMMISSION

Authors conclude: "It is believed that higher steam pressure and steam temperature can be expected in the future. It is further believed that more extensive use of meters and automatic control will accompany this trend to the higher pressures and temperatures.

"The increase in the use of meters and automatic control for marine power plants has been quite phenomenal in the last two years, and through this experience in applying equipment to present-day plants, valuable knowledge will be gained for further improvement of installations in all classes of steamships."

(6) **"Subdivision of U. S. Maritime Commission Vessels" by James L. Bates and Ivan J. Wanless,** respectively Director, Technical Division, and Chief, Preliminary Design Section, U. S. Maritime Commission.

Table I.—Loss in Deadweight Due to Subdivision Draft Limitation

Ship	Load line draft for minimum freeboard (mld.)	Subdivision draft (mld.)	Loss in deadweight, tons
C1A shelter deck	25′ 7$\frac{7}{16}$″	23′ 6″	1150
C1B flush deck	28′ 4⅝″	27′ 6″	470
C2 shelter deck	27′ 7⅝″	25′ 9″	1370
C3 shelter deck	29′ ¼″	28′ 6″	370

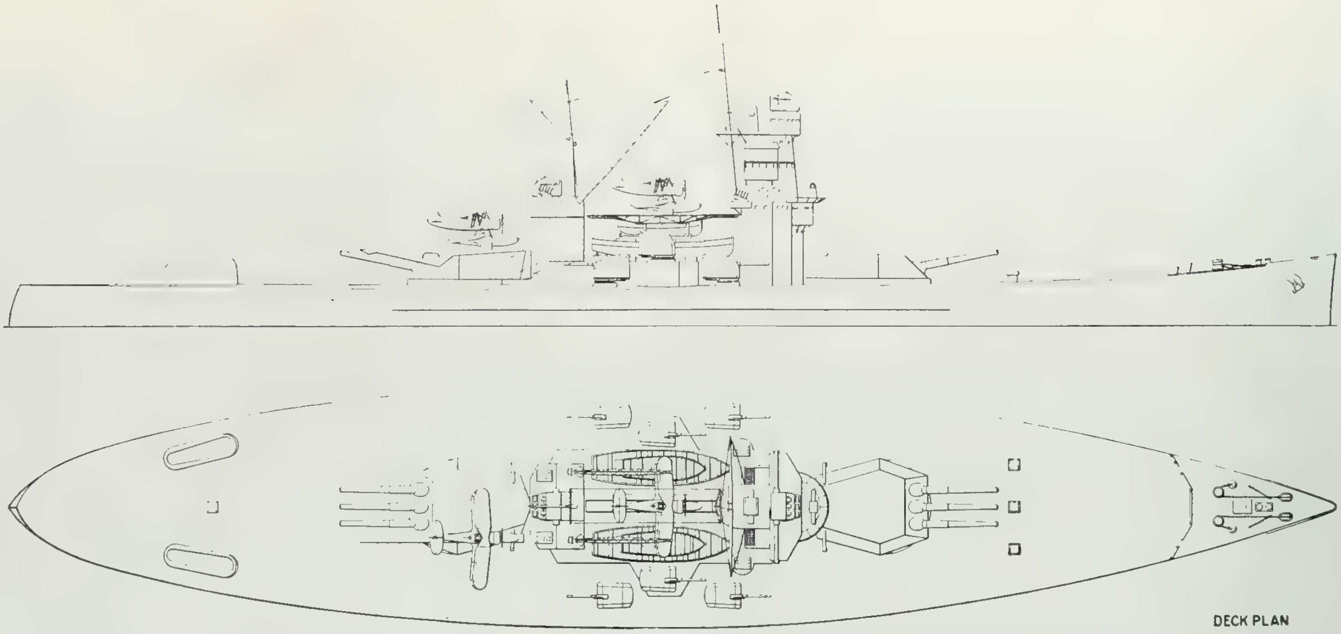
In the interest of safety, the Maritime Commission made it mandatory that all new cargo vessels of the long-range program under its jurisdiction should have a one compartment standard of subdivision.

"The Navy Department was in accord with this policy, but went further in suggesting that, in shelter-deck vessels, bulkheads in the shelter-deck space be continued in line with the main subdivision bulkheads below. These added portions of bulkhead were made watertight at their boundaries and the scantlings were made sufficient for watertight requirements.

"Our standard cargo ships are designed with five cargo holds so that the lengths and location of the larger holds had to be selected to suit the flooding curve. This, of course, is a handicap in arranging and balancing the cargo-handling facilities with the hold capacities."

In order to secure the desired compartment lengths, the draft had to be limited below that which could otherwise be obtained. This was particularly true of the shelter-deck type. Table I shows the corresponding loss in deadweight for several types.

Note the large loss of 1370 tons in the C-2 shelter type equivalent



OUTBOARD PROFILE AND DECK PLAN OF SMALL DISPLACEMENT CAPITAL SHIP

at present charter hire rates to a revenue loss of over $5000 a month.

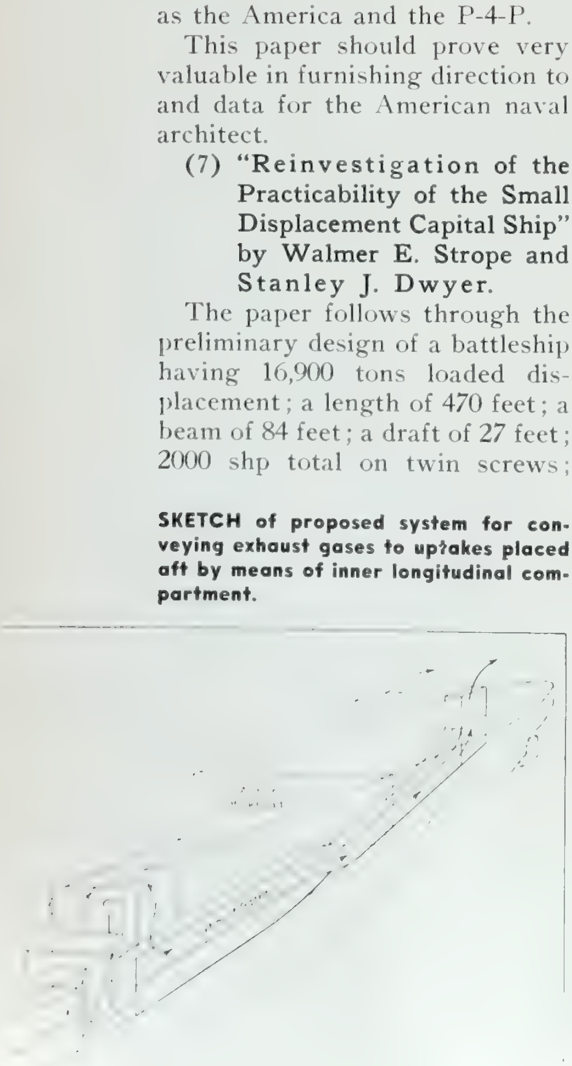
The authors analyze the results of changes involved in adapting the C-3 cargo design to produce various types of passenger cargo liners and naval auxiliaries. They discuss also the multiple-screw large passenger liner designs, such as the America and the P-4-P.

This paper should prove very valuable in furnishing direction to and data for the American naval architect.

(7) "Reinvestigation of the Practicability of the Small Displacement Capital Ship" by Walmer E. Strope and Stanley J. Dwyer.

The paper follows through the preliminary design of a battleship having 16,900 tons loaded displacement; a length of 470 feet; a beam of 84 feet; a draft of 27 feet; 2000 shp total on twin screws; cross-compound geared turbines operating on steam at 565 psi and 850° F.; 14″ side armor and 4″ protective deck; main battery of six 14″ guns in two turrets; a second battery of six 5″, 38 caliber, high angle rifles, plus as many 40 mm. antiaircraft mounts as possible.

SKETCH of proposed system for conveying exhaust gases to uptakes placed aft by means of inner longitudinal compartment.



An interesting feature of the design, as shown in the illustrations, is the substitution of two very low stacks aft and a longitudinal duct system connecting these stacks with the boiler uptakes, for the usual vertical shaft.

From this design work, the authors conclude as follows:

In the foregoing, we have designed a small displacement capital ship. Its form, weights, compartmentation and stability have been investigated, and certain conclusions can be drawn.

Form

The small displacement capital ship will have a low longitudinal coefficient; that is, it will have a large midship section area and fine ends. The length must be sufficiently great to give a reasonable speed-length ratio at the required speed. The beam must be large enough to insure sufficient transverse stability. The draft should be great enough to place all vital machinery and magazines under water. On a small displacement, these features necessitate a low longitudinal coefficient. This low longitudinal coefficient tends to poor behavior of the ship in a seaway but has a meritorious effect upon the longitudinal stability of the ship in case of damage to the ends. Another feature of the form arrived at in the test design was that the metacentric height remained practically constant for all drafts between the standard and full-load displacement. This is a desirable quality. Although none of the refinements of form, such as bulbous bow, sharp raking stem, etc., were included, the inclusion of these qualities should not affect the above statements.

Weights

In general, it is possible to incorporate the necessary armor, armament and machinery of a capital ship on a small displacement.

In particular, the small displacement capital ship can, on a ton-for-ton displacement basis, incorporate a greater volume of fire from the main battery than the large displacement capital ship. On the other hand, the volume of fire from the secondary will be inferior to the volume of fire from the large ship. The small displacement capital ship can carry sufficient aircraft for spotting and scouting purposes.

The thickness of armor on the small displacement capital ship can be equal to that on the large ship. This armor can be of sufficient extent to cover all vital machinery and magazines. However, this length of armored citadel, based purely on protection of vital spaces, does not insure adequate longitudinal stability in case of severe damage to the extremities of the ship. This is due in part to the large volume of space in the midship half-length which is a result of the low longitudinal coefficient. It is doubted whether a citadel of adequate length to insure this stability could be incorporated on the assumed displacement without reducing the overall thickness of the armor.

The weight of machinery necessary to furnish the required power can easily be included. However, it must be noted in this connection that the small displacement capital ship is essentially a ship of moderate speed. Not only is this due to the limitation of machinery weight, but the speed must be compatible with the length of the ship for efficient propulsion.

Compartmentation

The small displacement capital ship can be compartmented satisfactorily both for stability and for utility. However, the subdivision of the ship cannot be as efficient as that in the large vessel. There are several limitations to the compartmentation of the small displacement capital ship. The height of double bottom must be a minimum in order to have the machinery below the water line. The beam of the small displacement capital ship necessitates centerline bulkheads in many cases. This will have the detrimental effect of unsymmetrical flooding, which is of special concern in case of damage to the large machinery spaces amidships. This can be remedied only by increasing the length of the machinery compartments and hence the length of the citadel. The vital compartments can all be accommodated within the midship half-length due to the low longitudinal coefficient. Ample torpedo protection consisting of longitudinal bulkheads can be obtained.

Stability

It appears that sufficient transverse stability can be obtained in the small displacement capital ship without trouble. However, in order to provide adequate longitudinal stability to prevent excessive trims in case of severe damage to the extremities of the vessel, the length of armored citadel must be greater than that which is necessary to protect the vital spaces. It must be said that excessive trims do not appear until an extreme amount of damage has occurred in the ends of the vessel. Hence, it is questionable whether this additional length of citadel is necessary except in the theoretical case.

Recommendations

In the preceding conclusions we feel we have established the practicability of the small displacement capital ship as a heavily armed and armored warship of moderate speed and size. In this paper, we have carefully avoided any discussion of the strategic and tactical value of the small displacement capital ship. We have not discussed or attempted to prove whether she is valuable as a fleet unit in the battle-line, or in convoy duty for protection against surface raiders, or for defense of coastlines against invading fleets. We do feel, however, that if she is of value in any of these duties, she can be built more quickly and in larger numbers than the large displacement capital ship.

Because this vessel is of moderate dimensions, it can be built on numerous ways not now available for capital ship construction and can be repaired and drydocked at many ports and bases which cannot accommodate the larger vessels.

(8) **"The Wartime Training of Shipbuilders" by G. Guy Via,** Supervisor of Training, Newport News Shipbuilding and Dry Dock Company.

A thorough discussion of the system of training carried on at Newport News. This system is divided into five departments: (1) The Trainee Program; (2) The Upgrader Program; (3) Welding Training; (4) Supervisory Training; and (5) Apprentice Training.

The trainee in the regular trades is put through an intensive preparatory course and introduced to shop work.

Trainees showing promise are encouraged to take the Upgrader course. Typical curricula for both of these courses are listed.

Welding training is handled separately. It largely is composed of repetitive practice. Three courses are possible. (1) Tack welding usually takes 80-90 hours. On completion of this course, the trainee may be sent to the yard as a tack welder's helper. (2) If the trainee is unusually proficient in the school, he may go right on to arc welding and be transferred to yard as arc welder. (3) If the tack welder's helper under (1) shows promise he may be returned to the school and made into an arc welder.

Supervisory training consists largely in foremen's conferences or seminars, and in the training of leaders for these conferences.

Apprenticeship training is directed to the task of producing a steady infiltration of skilled craftsmen. A full-time shop instructor is employed for each group of from 12-16 apprentices.

The apprentice system at Newport News is very complete and has the enthusiastic support of the management. It is not, of course, a wartime training project but a long-time growth. This part of the paper appears in full abstract on page 67 of this issue.

(9) **"Some Observations on Ship Welding" by David Arnott,** Vice President and Chief Surveyor American Bureau of Shipping.

This is a very extensive and thorough treatment of: the history of the development of welding in American shipyards; the present state of the art with particular reference to mass production of Liberty type steamers; and notes on the control of procedure and inspection, distortion and residual stresses. We will be publishing parts of this paper in full, later on.

The author concludes: "Ship welding has now gathered such a momentum that its continual

(Page 93, please)

WELDING ON THE SHIP is quite different from training school welding.

Shipbuilder And

A CLEARING HOUSE FOR IDEAS ON THE WAR-WINNING JOB OF WHOLESALE PRODUCTION OF SKILL IN THE MARITIME CRAFTS

Crew Rations

ON LIBERTY SHIPS

IF IT BE TRUE, as Napoleon said, that "An army travels on its stomach," it is equally true that the morale on a ship at sea depends on the steward.

Before a Liberty steamer can sail with her 10,000-ton cargo of war supplies for the United Nations' forces overseas, more than 20 tons of food—enough to feed the crew for six months—must be stowed on board. Ships are stocked for such long periods because convoys cut down speed, and great distances have to be covered in this global war.

There are no grocery stores on the seaway to Murmansk, Suez, or Port Moresby, and before the ship clears port, her galley must be assured of provisions for approximately 32,400 man-sized meals.

At the start of a recent trip, the larder of a Liberty ship contained: 8500 pounds of meat, 12,500 pounds of vegetables, 6000 pounds of cereals, 5000 pounds of dairy products, 1500 pounds of poultry, 4600 pounds of fruit, 4600 pounds of groceries, and 1250 pounds of fish. That's quite an order, but the steward and his staff can inventory a ship and have it freshly supplied within a few days of sailing time.

Besides bulk food, the steward must remember many smaller items and kitchen utensils, from bouillon cubes to meat saw blades. Each edible item is multiplied three times by the number of men, meals and days. Take, for example, eggs. If every day each member of the crew eats one egg for breakfast, by the end of a six months' voyage they will have consumed approximately 10,800 eggs.

Here is a typical menu for the entire crew of a Liberty ship:

Breakfast: fruit juice, bananas, dry and boiled cereal, eggs, ham and bacon, salt fish, potatoes, biscuits, hot cakes, and tea and coffee.

Dinner: spring onions, soup, fresh fish, corned beef and cabbage, green peppers, vegetable, potatoes, salad, pudding, and tea and coffee.

Supper: celery and olives, soup, sirloin steak, macaroni, potatoes, 2 vegetables, salad, jello and cake, fruit, and tea and coffee.

This daily diet compares favorably with the meals served in the average American home. Fresh fish appears on the table every Friday, and chicken on Sunday. Modern refrigeration plants make it possible to serve salads with dinner and supper every day, and ice cream four times a week.

A special school for cooks and bakers is operated by the War Shipping Administration under its intensified training program to provide crews for America's merchant marine. A three-months course is given covering all phases of cooking, from taking care of the refrigeration system to such fine culinary points as the uses of spices and the preparation of sauces and gravies.

All this cookery requires considerable equipment, and at the outset of every voyage, it is the steward's job to see that the necessary pots and skillets are aboard. A Liberty ship's inventory lists 125 items of galley gear, including 26 different pans.

Living quarters of the ship's crew are in a series of comfortable rooms, each accommodating four or less men.

Seaman Training

CREW'S MESS
ON A LIBERTY

Enough clean linen must be carried to supply the needs of the crew for six months. Before sailing, each vessel is allotted 2160 sheets, 2160 turkish towels, 2760 face towels, 1380 pillow cases, and 118 blankets. Used linen is stored away until the end of the trip. The seamen wash their own clothing, and for this and other cleaning purposes, the ship is supplied with over 1000 pounds of soap.

All the food and supplies needed for the care and comfort of the crew are the responsibility of the steward. His job is not spectacular, but after every ship is loaded with planes, tanks, or munitions, he prepares it for a half year's voyage halfway round the world.

FOUNDATION OF THE SHIP

VI—Propulsion Machinery

Having the approximate horsepower of the propulsion machinery, the naval architect can get weights and sizes of the various types from manufacturers and make various engine room layouts. In consultation with the engineers of the ship operator, a choice must be made between:

(1) Reciprocating steam engine direct connected.
(2) Steam turbine — gear connected to shaft.
(3) Steam turbine—electrically connected to shaft.
(4) Combinations of (1) and (2), or of (1) and (3).
(5) Diesel engine—direct connected.
(6) Diesel engine — gears connected to shaft.
(7) Diesel engine—electrically connected.

Under the first four, there are further choices in connection with the boilers or steam generators. These may be either:

Water tube—oil burning.
Water tube—coal burning.
Fire table—oil burning.
Fire tube—coal burning.

Under the three types of diesel engine drive systems, there are further opportunities of choice between two- or four-stroke cycle engines, using either atmospheric or supercharge pressure on combustion air.

Power for operating auxiliary machinery, such as pumps, cargo winches, steering machine, windlass, capstans, ventilating blowers, and refrigeration machines, may be generated and applied in various ways. For generation of this power, we may use any one or combinations of the following methods:

(a) Turbine - drive generating sets.

(b) Diesel-drive generating sets.

(c) Generating sets driven off main engine.

Each of the three systems above would have electric motor drive for each auxiliary.

(d) Individual steam engine drive for each auxiliary, taking steam from main boilers on steamers or from waste heat boilers on motorships.

There are many other possible systems, but these four and their combinations cover all the usual modern installations.

Each of these main and auxiliary drives has its advantages, depending on service and economic conditions.

We shall return to this subject of **Choice of Power Plant** later in this series; our object here is to show the rough-draft process by which the naval architect determines the approximate weight of hull and its contents.

Having chosen his power plant, a layout of this plant is made and a location chosen in the ship. This location is usually just aft of the longitudinal center, the forward bulkhead being quite frequently on that center line. However, the engine room may in some cases be placed further aft with advantage, or even right at the stern, as in oil tankers and bulk cargo carriers

Placing the engine room aft saves space for cargo and saves weight by doing away with a large part of the long propeller shaft and the shaft alley. It sometimes causes difficulties of trim when steaming with a light cargo or in ballast. The great majority of the general cargo steamers afloat have the engine room amidships.

So let us assume that will be our choice. The great majority of modern steamers, aside from the war effort to produce the great Liberty ship fleet, are propelled by geared-turbine engines, and the great majority of motorships by direct-connected diesels.

However, the majority of the readers of this training section are now working on Liberty cargo steamers, each of which is powered with a simple reciprocating steam engine, taking steam from two water tube, oil-burning boilers, and having all auxiliaries operated by steam engines.

In our next installment, we will discuss the power plant of the EC-2 Liberty cargo steamer and will discover some of the reasons why that ship requires so much less power for propulsion than seems to be indicated by our preliminary approximate formula.

Casualty Training

Already America is benefiting from the training of war casualties to produce useful man power in the war industries. Take the case of Obie Bartlett.

Obie Bartlett is busier than the proverbial one-armed paperhanger.

You see, a Jap bomb ripped off his left arm during an air raid on Honolulu, where Obie was stationed with the 47th Quartermaster Corps of the U. S. Army.

Now the patriotic 25-year-old negro is doing his bit as a welder (yes, welder) at the California Shipbuilding Corporation's yard at Terminal Island.

After four months in an Army hospital, young Mr. Bartlett took a high school welding course and has been working in the Calship plate shop on the swing shift for more than three months.

"Boy, I sure am thankful that I can at least help to build ships to carry guns and ammunition to my buddies in the Army," Mr. Bartlett said.

"I kinda like to feel that my 'stinger' (welding tool) is just as powerful as the rifle I left behind me."

With his wife and two children, he lives at 773 North Pacific Avenue, San Pedro.

Emergency Shipping Training Course

The course, Wartime Ocean Transportation, will be offered by Stanford University as part of the Engineering, Science and management War Training Program, scheduled to start on January 12, 1943, at the American Institute of Banking, 58 Sutter Street, San Francisco.

The class, to be held every Tuesday evening, from 7 to 9, for 15 weeks, will have as instructor Carl E. McDowell, assistant to the vice president and general manager, McCormick Steamship Company. Mr. McDowell was recently associated with the War Shipping Administration in establishing its Division of Cargo Requirements in Washington, D. C.

The Course will consist of description of the organizations of War Shipping Administration and U. S. Maritime Commission; relation of vessel operators with the various divisions of these two groups, and with the Army, Navy, Board of Economic Warfare, and other branches of the Government; reviews of general orders and other regulations (fiscal, operating, traffic, legal, etc.) which govern the activities of vessel operators; and post-war outlook for owners and operators.

Binoculars Urgently Needed

Many patriotic Americans have donated their binoculars to the U. S. Navy for the nominal sum of $1, the instruments to be returned if possible at the end of the war. To these donors the Navy is deeply grateful.

However, the need for a greater supply has become so acute that the Navy announces its willingness to purchase at their appraised valuation Zeiss or Bausch & Lomb binoculars in the 6X30 or 7X50 sizes. The price will be determined by the Naval Observatory, Washington, D. C., and will be based upon the condition of the instrument and its wholesale cost to the Government. Prices range up to $85 for 7X50 and up to $55 for 6X30.

Binoculars purchased in this manner will not be returned to the former owners after the war. If the owner wishes to ascertain the price which the Navy will offer for his or her binoculars, a tag should be attached to the instrument showing the owner's name and address with the notation "submitted for appraisal," before being shipped to the Naval Observatory, Washington, D. C.

SEVEN-MINUTE SHIP

This model of a prefabricated Liberty was put together in sections in about seven minutes by Henry J. Kaiser to demonstrate to Rear Admiral Howard L. Vickery (left) and Rear Admiral Emory S. Land (right) the order in which his Liberties are assembled at his yards.

LIVING QUARTERS for housing more than 200 apprentices, adjacent to a shipyard, has just been completed and is now in service at Newport News, Va.

SHIPYARD APPRENTICE TRAINING

by G. Guy Via
Supervisor of Training
Newport News S. B. & D. D. Co.

TO MANY, THE idea of employing a full-time shop instructor to direct the training of a group of from twelve to sixteen apprentices is an unthinkable waste of time and money. On the contrary, turning this group of smart, ambitious young men loose in a plant to pick up training and experience as best they can is far more wasteful. The volume of production which a properly directed group of apprentices can turn out is surprising, and well repays the management which is far-seeing enough to make such an investment. Indeed, the successful prosecution of any training program is in direct proportion to the continuing interest and support of the head management, without which results will probably be dismal. If management can accept the idea of a staff of full-time instructors working with and directing the efforts of these young men, the apprentice program is from that moment well on the way to success. Only details need to be filled in.

Assuming the acceptance of this advanced concept of apprentice training, let us fill in some of these details, beginning with the initial selection of the boy from the list of applicants. The ideal applicant will be intelligent, physically fit and morally sound, since it takes men of character to build ships of character; he also will have initiative coupled with industry. Some of these qualities can be measured with a fair degree of accuracy, but others can only be surmised from the evidence offered.

We shall make use of a natural law regarding the apparent distribution of abilities and qualities in individuals which may be graphically illustrated by an interesting curve known as the curve of normal distribution.

Its use in the selection of applicants may be roughly stated thus: Of one hundred average applicants:

4 will be exceptional, denominated **A**;

24 will be superior, denominated **B**;

44 will be average, denominated **C**;

24 will be inferior, denominated **D**; and

4 will be deficient, denominated **E**.

One of the most desirable characteristics in an apprentice is the ability to learn, to assimilate knowledge. If we require the applicant to submit an authentic transcript of his high school record we shall have before us concrete evidence of his sustained effort in this direction over a number of years, four in the case of high school graduates. His average grade in a variety of subjects over this period can be readily computed, and the applicant will be rated **A, B, C** or **D**, accordingly. If we establish graduation from high school as a requirement, there will obviously be none graded **E**.

A second desirable characteristic is suitable physique. This means that with due consideration for the age of the applicant, height and weight can also be set up on an **A-B-C-D-E** scale.

Moral soundness cannot be measured, but may be checked on through the judicious use of letlers of inquiry. Nor can initiative be graded, but its possession by the applicant can be readily determined by searching into his extracurricular activities, particularly those activities for which there is no set reward, such as a medal or letter. Whenever a youth is willing to volunteer his time after school hours on organized activities such as Boy Scout work, church work, journalism, music, etc., we may fairly assume that he possesses initiative in proportion.

For convenience, we shall represent the scholastic-physical ratings as a fraction, with the school transcript rating as the numerator, and the age-height-weight rating as the denominator. Then a number of applicants so rated would, with emphasis on brains, present themselves in the order of desirability thus:

$$\frac{A}{A}, \frac{A}{B}, \frac{A}{C}, \frac{A}{D}, \frac{A}{E}, \frac{B}{A}, \frac{B}{B}, \frac{B}{C}, \frac{B}{D}, \frac{B}{E},$$
$$\frac{C}{A}, \frac{C}{B}, \frac{C}{C}, \frac{C}{D}, \frac{C}{E}, \frac{D}{A}, \frac{D}{B}, \frac{D}{C}, \frac{D}{D}, \frac{D}{E}$$

Of course, if we were emphasizing brawn instead of brains, we would arrange the series according to the denominators. It can be said here that this method of selecting applicants for apprenticeship has produced very gratifying results. The personal favoritism angle is completely eliminated since each applicant stands on his own established record.

Having selected the best available human material we send

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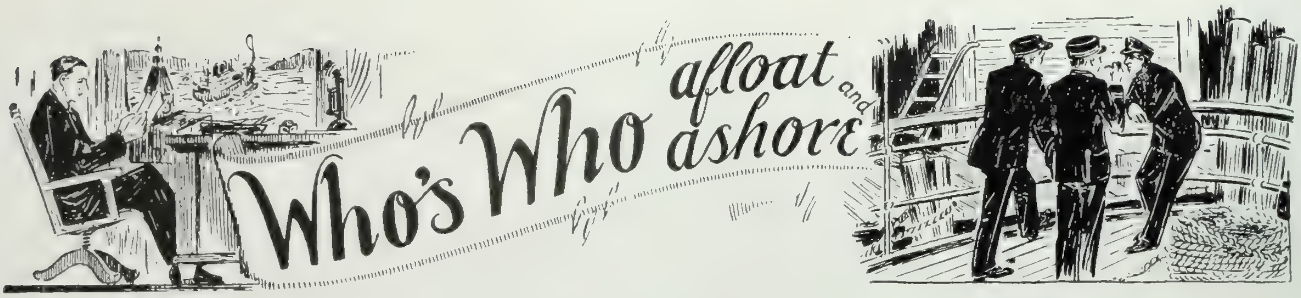


Who's Who afloat and ashore

Edited by Jerry E. Scanlon

Federal Oldtimers Club

Resolved that submarines must be stopped, veteran shipbuilders with a total of 3619 years of service to the Federal Shipbuilding and Dry Dock Company are back on the job in its Kearny and Port Newark, N.J., yards after organizing on November 16 the Oldtimers Club of the shipbuilding subsidiary of U. S. Steel.

No one with less than 20 years of service to the subsidiary can belong. A total of 148 men and two women are eligible. Of that number, 139 men and one woman attended the organization dinner held in the Newark Athletic Club. The lone woman present was Miss Vivian I. McCarron, of Jersey City, coordinator of the Time Department.

The gathering honored **L. H. Korndorff,** company president, with a pin marking his 45 years of service with subsidiaries of U. S. Steel. It was presented by **Frank A. McMillan,** of South Orange, N.J., production manager of Federal.

Officers elected, all of Kearny, were: President, **Joseph A. Dunn,** of Belleville, N.J., foreman of electricians; vice president, **Thomas B. Smith,** Maplewood, N.J., welding foreman; secretary, **John F. Schmidt,** Roselle Park, N.J., electrical maintenance foreman; financial secretary, **Scott F. Cheesman,** Jersey City, employment manager; and treasurer, **Fred Hulme,** Union, N.J., supervisor of training.

OLDTIMER'S CLUB

JOSEPH A. DUNN, president of the newly formed Oldtimer's Club of Federal Shipbuilding and Dry Dock Company, and foreman of electricians at the company's Kearny yard, is being congratulated by L. H. Korndorf, president of the yard and also a member of the club.

Ford Chairman Pacific P. A. B.

Edward T. Ford, former vice president of W. R. Grace & Co., and also president of the Grace Line, who retired in 1938 but remained a director of the concern, has been named chairman of the Pacific Coast Regional Price Adjustment Board for the U.S. Navy with offices in San Francisco.

Ford is recognized as one of the outstanding steamship and merchandising executives in the country. He supervised the building of the four big Santa liners that operated in the coast-to-coast and Latin American service before being reassigned to the New York-South American run.

EDWARD T. FORD

S. F. Propellers Elect

The Propeller Club of the United States, Port of San Francisco, will be guided during the next twelve months by a very capable staff of officers.

Hugh Gallagher, vice president in charge of operations for the Matson Navigation Company, is the new president. He succeeded **Arthur B. Poole,** vice president of the American President Lines, whose ability as a leader won the acclaim of the shipping fraternity.

Fred L. Doelker, Grace Line's vice president on the Pacific Coast, and regarded as one of the outstanding maritime executives in the country, is first vice president.

Other officers elected were **George Armes,** president General Engineering & Dry Dock Co., second vice president; **William J. Bush,** vice president of the American President Lines, third vice president. **Eugene "Gene" Hoff-**

man, able secretary-treasurer, was again returned to office.

Five others, including Poole, were elected to the board of governors for three-year terms. They were **Harry C. Ewing,** Pacific Coast manager for the Luckenbach Line; **Charles L. Wheeler,** vice president of the McCormick Steamship Company; **Byron L. Picard** of the Waterfront Employers Association elected to fill the unexpired term of **Captain Lewis Mesherry,** deceased; and **John Davidson** of the American Hawaiian Steamship Company named to fill the post vacated by **John E. Cushing's** assignment to Washington with the War Shipping Administration.

President Lines' Promotions

Promotions of three well-known and popular marine executives were announced late in November by the American President Lines following the death in October of **L. H. "Larry" Westdahl,** marine superintendent.

Captain W. G. Pearch, who has been port captain since 1925, was named marine superintendent. **C. E. Nordling** was promoted from pier to port superintendent and **Captain Harry Young,** formerly skipper of the President Wilson and other vessels, succeeded Captain Pearch as port captain.

Captain Pearch was with the old Dollar Steamship Company since 1920, starting as chief officer and then as master. He came shoreside in 1925 as port captain, a post he held until his present promotion.

Nordling has been with the concern since 1923, Captain Young in addition to being skipper of various vessel of the company was onetime, 1926 to 1936, port captain in Shanghai. He started as a deck seaman in 1919. Until his present elevation, he had been assistant port captain since 1937.

CAPT. WALTER G. PEARCH
Marine Superintendent, American President Lines.

Isherwood with WSA

Felix Isherwood, formerly associated with the Coastwise Line, has been appointed port representative at Portland, Oregon, the War Shipping Administration announced on October 5.

Todd Appointment

John D. Reilly, president of the Todd Shipyards Corporation, on October 10 announced appointment of **A. V. Johansen** as a coordinator of ship repairs on the engineering staff of the corporation.

In 1900 when the American passenger liner New York was being rebuilt at Erie Basin in Brooklyn, Mr. Johansen, as a young man, started working as a machinist's apprentice under the late William H. Todd.

He later studied mechanical engineering at Stevens Institute of Technology and Columbia University. After completing these courses, he returned to the Todd organization as a draftsman and estimator, working under Mr. Todd's direct supervision.

In 1917 he became exclusive Classification Society Surveyor, and in 1920 joined the Pioneer Iron Works of Brooklyn, N. Y., as chief engineer. In 1923 he became a partner in the firm of Garmey, Bodin and Johansen, consulting engineers.

A. V. JOHANSEN
Appointed to the engineering staff of the Todd Shipyards Corporation.

Port Engineer Honored

Henry Wolters, port engineer, is now entered on his twenty-sixth year with Matson Navigation Company. A few of the Matson executives tendered Mr. Wolters a surprise dinner on his recent completion of a quarter of a century of service.

New Port Captain

Captain Frank A. Johnson, who has been in command of Matson Navigation Company's liner Matsonia, is now port captain. He came shoreside when **Captain M. J. Bulger,** only in this post a few months, was called to serve the War Shipping Administration, in New Zealand.

It is recalled Captain Johnson was for many years skipper of the coaster Yale, until this vessel, part of the assets of the old Los Angeles Steamship Company, was taken over by Matson Navigation.

Shifts and Changes

Nat Pischiotta, formerly production engineer and office manager for the Thomas Machine Works, Terminal Island, is now employed as a planning engineer at Yard No. 1 of the Pacific Bridge Company, Alameda. He is assistant to **Dick Boersig,** general superintendent and **Carl Landberg,** outfitting superintendent.

Back to the sea as master of the Grace Line's S.S. Philip P. Barbour is **Captain Edwin P. Bartlett,** one of the most colorful and widely-known skippers of the Pacific.

Some time back, Captain Bart

TODD'S NEW VICE PRESIDENT
CHARLES F. STRENZ was appointed vice president in charge of finance of the Todd Shipyards Corporation and all subsidiary companies, as announced by John D. Reilly, president, November 1.

lett retired as a member of the San Francisco Bar Pilots, after serving in this Association since he was named by the Governor of California, following years as master of the speedster H. F. Alexander and other fast passenger liners for the old Pacific (Admiral Line) Steamship Company.

Captain Theodore K. "Teddy" Oaks, skipper, who had for years been retired at his Danville ranch, is again on deck. He is back under the house flag of the Grace Line.

ADMIRAL WILLIAM D. LEAHY, U.S.N., delivers an eloquent address before the annual banquet of the Society of Naval Architects and Marine Engineers. The abstract of his address appears on page 49 of this issue.

He is remembered as having been master of the motorship City of Panama, the liners Colombia and Ecuador, when these vessels sailed in the coast-to-coast service via the Spanish Americas for the old Panama Mail Line.

Cyrus A. Anderson, well known in freight forwarding circles, is now attached to the staff of the Encinal Terminal Company, Alameda. He joined the Encinal interests following the close of the Seatrain Management Corporation's offices in San Francisco because of war conditions.

Shepard Line now has its own offices in San Francisco, located at 220 Bush Street. **F. C. Ninnis** is in charge. General Steamship represented this line before the war in this area.

William "Bill" Bailey, for years identified with the Seattle Merchants' Exchange, has joined the U. S. Coast Guard as chief machinist's mate, attached to the routing office.

Charles M. Chasel, formerly with the American President Lines and the C. F. Sharp & Co. offices in San Francisco, is the new manager in Los Angeles for Alberto Scott & Co.

Allan T. McCulloch, U. S. Maritime Inspector, attached to the Kaiser Yards, Richmond, is confined to St. Joseph's Hospital, following a major operation. At press time, he was reported well on the way to recovery.

Mr. McCulloch was formerly on tankers of the Richfield Oil Company. He is the son of the late Allan McCulloch, one of the charter members of the MEBA.

Columbus "Clum" Lowith, formerly chief engineer with the Matson Navigation Company, but for the last two years in the Navy as Chief on the U.S.S. Cuyama, is shoreside attached to the U. S. Maritime Academy at Coyote Point, San Mateo.

R. H. Culbertson, formerly of Tacoma and one-time southwestern manager for the Grace Line in Washington, as well as having been at various times identified with the Williams Steamship Company and the Bayside Steamship Line, has become associated with the Washington Motor Transport Association as secretary-treasurer of the Washington Motor Transport Association, Inc. He is also district manager for the Pacific Inland Tariff bureau.

TODD'S NEW TREASURER
EMILE P. ENFER was elected treasurer of the Todd Shipyards Corporation recently. He was formerly comptroller of the corporation.

Trinidad Manager For Alcoa S.S. Co.

Harmon Lewis, president of Alcoa Steamship Company, Inc., has announced the appointment of **Frank K. Bell** as manager for the company in Trinidad, B.W.I. Mr. Bell left New York, to take up his new duties early in November.

Well known in shipping circles in the United States and Canada, Mr. Bell started in shipping with the Cunard Line in 1920 as freight clerk, later holding positions as freight booking clerk, claim agent, traveling freight agent, assistant manager in Havana and special representative in New Orleans. In 1929 he was transferred to the N.Y.K. Line and held the position of general passenger agent and advertising and publicity manager.

Shortly after the outbreak of the war, Mr. Bell accepted a post under the Australian Government, and later was appointed Director of Shipping and Forwarding for the Commonwealth of Australia War Supplies Procurement.

CAPTAIN HENRY L. STEPHENSON, well known in Pacific marine circles, whose fate as a prisoner of a Nazi submarine skipper remains a mystery. His vessel was sunk and he was taken aboard the undersea craft. Captain Stephenson sailed out of San Francisco and other Pacific Coast ports for years. His home is in New Rochelle, N. Y. His son is commander of a fighting ship.

U. S. Lines Promotions

At a November meeting of the Board of Directors of the United States Lines, New York City, three new vice presidents were elected and a vice president was raised to senior vice president.

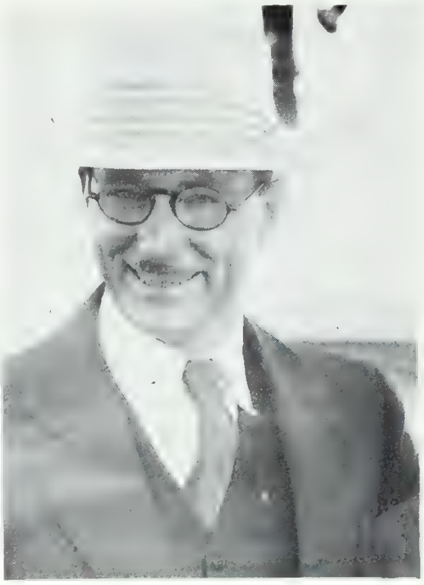
A. J. McCarthy was elected senior vice president; **Raymond M. Hicks,** vice president and treasurer; **Gaillard F. Ravenel,** vice president in charge of operations; and **V. J. Freeze,** vice president in charge of freight traffic.

All of these men are veterans in United States Lines service: Mr. McCarthy is rounding out 44 years, becoming general manager in 1931, vice president in charge of operation in 1936, and director in 1942; Mr. Hicks was appointed assistant treasurer in 1931, treasurer in 1933, and director in 1937; Mr. Ravenel joined the I.M.M. in 1919, was appointed assistant to the president in 1921, manager of Boston office in 1925, operations manager of Baltimore Mail S. S. Co. (a subsidiary) in 1931, and president of that company in 1938; Mr. Freese came into the U. S. Lines' family through the Roosevelt S. S. Co. in 1927, of which he was traffic manager, and was made general freight traffic manager of U. S. Lines in 1937.

Homer Heads S.D.U.S.S.

Homer Lenoir Ferguson, president and chairman of the board of Newport News Shipbuilding and Dry Dock Company, has accepted the position of chairman of the Shipbuilders Division in the United Seamen's Service, campaigning for $6,000,000, according to a recent announcement of Admiral Emory S. Land, chairman of the board of trustees of United Seamen's Service and War Shipping Administrator.

Mr. Ferguson's division is one of four groups active in the fund-raising drive for USS, which is providing recreation clubs, recuperation centers for survivors of torpedoed ships, hotels where necessary, and other facilities for officers and men of the merchant marine in principal United States and United Nations ports. The other three divisions are shipowners and operators, maritime unions and the public.



JOSEPH SHEUCH, well-known former purser of the S.S. Santa Rosa, and veteran in Pacific shipping, now connected with the U. S. Maritime Commission in New York.

HOMER LENOIR FERGUSON

New Bar Pilot

Captain R. W. Kelly was named San Francisco bar pilot last month. He was for years with the Associated Oil Company and enjoys a wide acquaintanceship in West Coast shipping circles. He succeeded to the post vacated by resignation of Captain A. T. Hunter.

Emmet J. McCormick, vice president of the Moore-McCormack Lines, New York, is chairman of the shipowners' division of the United Seamen's Service to raise $6,000,000 to be used in the rehabilitation program of torpedoed and wounded merchant sailors.

A. L. Young, member of the War Shipping Administration, located on the Pacific Coast for a few months, has resigned and joined the staff of Nelson Rockefeller, coordinator of American affairs. Mr. Young is now reported in Washington. He is well known to Pacific Coast marine interests after long association with the Fireman's Fund Insurance Company.

Lee to Navy

Pacific Coast friends of William H. Lee, assistant general manager of United States Lines in New York, were advised he had been ordered into active Navy service outside continental United States, with the rank of captain.

A veteran of World War I, Captain Lee served on the USS Houston in the last conflict. Before joining the United States Lines as marine superintendent, he had been associated with the J. H. Winchester Line, and later the Roosevelt Steamship Company, until the two companies merged.

For the Duration

John B. Morrison, president of J. J. Moore & Co., is now in the U. S. armed forces. His place is being handled by James C. Morrison, who was recently elected a vice president.

Friends of Garner A. Tullis of New Orleans were advised of his appointment as special representative of the War Shipping Administration in the Gulf Coast area.

NECROLOGY

No. 1 Enemy Of Corrosion

The many friends of David W. Haering, president of D. W. Haering and Company, Inc., of Chicago, were shocked to learn of his death at the age of 34 after a brief two-day siege of pneumonia. Mr. Haering was taken ill on Thursday and died at the West Suburban Hospital in Oak Park on Friday, October 30, 1942.

David Haering was born in Chicago on February 3, 1908. He attended the Chicago grammar schools, the Austin High School, and was graduated from the University of Illinois in 1929. He was married to Vera Wilson in 1938, and his wife, his father, and two sisters survive him.

He developed the company that bears his name through the period of depression from a one-man organization into a well established corporation, having headquarters at 205 West Wacker Drive, a factory, control, and research laboratories in Chicago, and technical offices in the principal industrial cities of the United States.

Mr. Haering, president and technical director of the company, was an outstanding authority on scale and corrosion. His research laboratories discovered and developed 28 different organic glucosides for the control of scale and corrosion in aqueous systems.

D. W. HAERING

A Veteran Lumber Merchant

Hundreds of employees of the Western-Walker Company (ship joiners to the California Shipbuilding Corporation) thrilled to the challenge of their chief, D. J. Cahill, as he addressed them on October 13, when the firm was presented with the "M" (Merit) Burgee by the U. S. Maritime Commission. Said Mr. Cahill:

"The need for ships is so pressing, that no consideration of personal sacrifice, however great, should be permitted to impede their construction and delivery.

"It would indeed be a sorry return for the sacrifices being made by our fighting men were we, at home, to disregard our solemn obligation to them, and falter in the part entrusted to us in the production of ships necessary for transporting to the battlefronts the implements of war so desperately needed by our heroic defenders who daily and hourly are facing carnage and death on the battle line.

"I feel that I can speak for each man and woman who has had a part in this production achievement, so generously recognized by the Maritime Commission, that this is but an earnest endeavor of what we shall, with the help of God, continue to do, only with intensified fervor and increased results, to the end that our enemies may be speedily crushed, and the abomination of war banished from the land; and may God speed the day when the homes and firesides of free and liberated peoples everywhere may be forever relieved from the terror of desecration of hirelings of brutal aggressors temporarily self-inflated by visions of world domination."

Just as he finished this stirring appeal, Mr. Cahill was stricken with a heart attack and passed away without recovering consciousness.

As president of the Western Hardwood Lumber Co., and principal of the Western-Walker Co., no man had done more than he to speed the construction of Liberty ships, no man had given more of inspiration, of energy, of devotion to this country. The deep sympathy of his hundreds of friends goes out to his bereaved family.

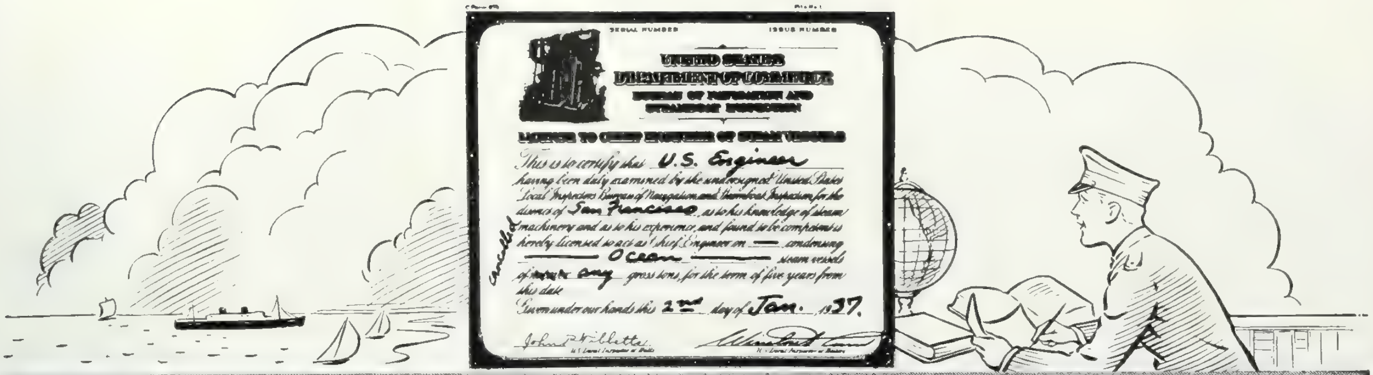
Service Head

William Salt, for many years head of the Service Department of the De Laval Steam Turbine Co., died suddenly on October 31, 1942. Mr. Salt was one of the oldest De Laval employees in point of service, having been associated with the company for more than forty years.

Navy Ensign

Walter Cobb Coleman, an ensign in the USNR, former traffic representative for the Grace Line in the central western territory, was killed in a Navy plane crash in the Caribbean.

Twenty-eight years of age, "Red," as he was known, had sailed on numerous ships from Pacific Coast ports to South America.



SERIAL NUMBER ISSUE NUMBER

UNITED STATES
DEPARTMENT OF COMMERCE

This is to certify that U.S. Engineer
having been duly examined by the undersigned United States
Local Inspectors Bureau of Navigation and Steamboat Inspection for the
district of San Francisco, as to his knowledge of steam
machinery and as to his experience, and found to be competent is
hereby licensed to act as Chief Engineer on — condensing
Ocean steam vessels
of any gross tons, for the term of five years from
this date
Given under our hands this 2nd day of Jan. 1937.

Cancelled

John P. Willetts
U.S. Local Inspector of Hulls

U.S. Local Inspector of Boilers

Your Problems Answered

by "The Chief"

"The Chief's" department welcomes questions—Just write "The Chief," Pacific Marine Review, 500 Sansome Street, San Francisco, California

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Electric Drive Tankers

VII—Electric Propulsion Equipment (cont.)

Recent orders for electric-propulsion tankers placed by the Maritime Commission has increased the number of these vessels to the point where major consideration must be given to their full coverage. "The Chief", therefore, plans to devote this space for an indefinite time to descriptions and instructions on the steam and electrical features of this type of ship, with space given to specific questions as they come in.

Much has already been printed on the general scheme and principles. More specific details can now be offered.

The switchgear equipment on each vessel consists of the propulsion control panel, the auxiliary generator and distribution switchboard, and a distribution group for the cargo and stripping pumps. In the following description, all figures in parenthesis refer to the accompanying drawings.

400-KW Auxiliary Generators

During normal operation at sea, one of the auxiliary turbine-generator sets is running, the 400-kw auxiliary generator furnishing the 440-volt and 115-volt auxiliary power buses. During pumping operation, both 400-kw auxiliary generators can be operated in parallel to furnish power for pumping. The 50-kw port generator is normally not to be paralleled with the auxiliary generators.

Excitation power is taken from the excitation bus; the field circuits are closed through the breakers (161) or (162). Voltage can be regulated manually with the rheostat (147) or (187) or automatically by operation of the switch (150) or (190). Each generator is connected to the auxiliary power bus through the breaker (141) or (181) and the disconnect switch (148) or (188).

75-KW Exciters

The 75-kw exciters are used to furnish power to the field circuits of the propulsion motor and propulsion generator. Only one exciter is connected to this circuit at one time; selection of the exciter is made by the exciter transfer switch (42), access to which is gained by opening the door on Panel C. The door handle is provided with an interlock (44) which will trip the propulsion motor and generator field contactors if the door is opened, thus removing the inductive load (but not the exciter voltage) from this switch, and at the same time tripping the magne-blast air circuit breaker feeding the 2300-volt transformer. The door handle interlock can be reset so that the propulsion motor and generator field contactors may again be picked up by turning the door handle and small knob next to it in the counterclockwise direction. This, however, should not be done until the switch has been operated and the door is being closed. A glass window is provided on the door so that the position of the selector switch can be observed without opening the door.

Excitation for the operating exciter may be taken from one of two sources: the excitation bus or the amplidyne generator.

Cargo Pump Motors

The normal power supply for the cargo pump motors and stripping pump motors is the main propulsion generator. The propulsion bus is connected to the variable frequency bus (normal pumping bus) through a disconnect switch and a magne-blast air circuit breaker mounted on panel B, back of the door, and through the 2300/450-volt transformer.

The cargo pumps will operate normally at some frequency between 50 and 60 cycles. The load on the cargo-pump motors will vary, depending on the type of cargo to be pumped and on the discharge pressure. When heavy oils or water are to be pumped, the pumps should be operated from the variable frequency bus, and the frequency adjusted to prevent overloading. Ammeters are provided to read the current in the cargo-pump circuit, so that it will be possible to determine at all times the load on the cargo-pump motors. Operation of the cargo pumps from the variable frequency bus is also desirable when pumping into small lines, so that pump speed may be reduced, thus permitting the discharge pressure to be kept within allowable limits.

The auxiliary power supply for the cargo pumps is the constant-frequency bus, which is supplied by the auxiliary generators. The two auxiliary generators must be connected in parallel if

2300-VOLT TRANSFORMER FEEDER

1 Ammeter, 2300-volt transformer
2 Voltmeter, variable frequency and pumping bus
3 Frequency meter, variable frequency and pumping bus
4 Ammeter, cargo pump No. 1
5 Ammeter, cargo pump No. 2
6 Ammeter, cargo pump No. 3
7 Ammeter, stripping pump No. 1
8 Ammeter, stripping pump No. 2
9 Underfrequency relay
10 Green ind. lamp, main condensate pump No. 2
11 Green ind. lamp, auxiliary circulating pump
12 Green ind. lamp, auxiliary condensate pump
13 Green ind. lamp, lube oil service pump No. 1
14 Green ind. lamp, lube oil service pump No. 2
15 Green ind. lamp, forced draft fan No. 1
16 Green ind. lamp, forced draft fan No. 2
17 Ground detector switch
18 Green ind. lamp, main circulating pump
19 Green ind. lamp, main condensate pump No. 1
20 Green ind. lamp, forced draft fan No. 3
21 Green ind. lamp, main cooling fan
22 Voltmeter switch
23 Green indicating lamp
24 White indicating lamp
25 Ground detector lamps
26 Control switch, 2300-volt transformer feeder
27 Control switch, cargo pump No. 1
28 Control switch, cargo pump No. 2
29 Control switch, cargo pump No. 3
30 Control switch, stripping pump No. 1
31 Control switch, stripping pump No. 2
32 Ammeter switch, 2300-volt transformer
33 Ammeter switch, cargo pump No. 1
34 Ammeter switch, cargo pump No. 2
35 Ammeter switch, cargo pump No. 3
36 Ammeter switch, stripping pump No. 1
37 Ammeter switch, stripping pump No. 2

75-KW EXCITERS

38 Ammeter
39 Voltmeter
40 Pilot lamp, 75-kw exciter No. 1
41 Pilot lamp, 75-kw exciter No. 2
42 Exciter transfer switch
43 Voltmeter switch
44 Door interlock
45 Circuit breaker, constant frequency and pumping bus, 440 v

LIGHT AND POWER FEEDERS

46 Spare
47 Spare
48 Heaters, main generator
49 Heaters, main motor
50 Navigating lights
51 Boiler order telegraph
52 Engine order telegraph
53 Docking order telegraph
54 Rudder angle indicator
55 Heaters, 2300-volt cubicle
56 Spare
57 Boiler room lights
58 Spare
59 Upper deck lights
60 Spare
61 Amidship lights
62 Poopdeck lights
63 Engine room lights
64 Green ind. lamps, steering motor No. 1
65 Green Ind. lamps, steering motor No. 2
66 Alarm source, white ind. lamp
67 Alarm reset
68 Alarm indication, red ind. lamp
69 Spare
70 Forward quarters
71 Spare
72 Emergency engine room lights
73 Spare
74 Spare
75 Port signal seachlight
76 Starboard signal searchlight
77 Degaussing system

440-VOLT FEEDERS

78 Port steering gear motor
79 Starboard steering gear motor
80 Spare
81 Auxiliary circulating pump
82 Spare
83 Spare
84 Lighting transformer
85 Forced draft fan No. 1
86 Forced draft fan No. 2
87 Forced draft fan No. 3
88 Fire and butterworth pump No.1
89 Fire and butterworth pump No.2
90 Galley power transformer
91 Main circulating pump
92 Spare
93 Shore line, 115 volts a.c.
94 Shore line, 440 volts a.c.
95 Spare

440-VOLT FEEDERS

96 Spare
97 Spare
98 Lube oil service pump No. 1
99 Lube oil service pump No. 2
100 Lube oil separator
101 Fuel oil service pump No. 1
102 Fuel oil service pump No. 2
103 Fuel oil transfer pump No. 1
104 Fuel oil transfer pump No. 2
105 Main shaft turning gear motor
106 Quarters ventilation
107 Quarters ventilation
108 Spare
109 Pump room exhaust blower
110 Turbine turning gear motor
111 Boiler room and engine room ventilating fan No. 1
112 Boiler room and engine room ventilating fan No. 2
113 Boiler room and engine room ventilating fan No. 3
114 Boiler room and engine room ventilating fan No. 4
115 Atmospheric drain and receiver pump
116 Drinking water pump No. 1
117 Drinking water pump No. 2
118 Fresh wash water pump No. 1
119 Fresh wash water pump No. 2
120 Salt water service pump
121 Sanitary pump
122 Evaporator feed pump
123 Ship service air compressor
124 Engine room bilge pump No. 1
125 Engine room bilge pump No. 2
126 Refrigerator compressor and condenser
127 Spare
128 Machine shop power
129 Radio feeder
130 Condensate pump
131 Main condensate pump No. 1
132 Main condensate pump No. 2
133 Motor cooling fan
134 Combustion control compressor
135 Spare

400-KW AUX.GENERATOR NO.1

136 Ammeter
137 Wattmeter
138 Voltmeter
139 Field ammeter
140 Reverse power relay
141 Circuit breaker, aux.gen. No.1
142 Pilot lamp
143 Ammeter switch
144 Governor control switch
145 Synchronizing switch
146 Voltmeter switch
147 Generator field rheostat
148 Disconnecting switch, auxiliary generator No. 1
149 Regulator voltage adjustment
150 Voltage regulation, in-automatic, out-manual

55-KW EXCITERS

151 Frequency meter
152 Synchronizing lamp
153 Synchroscope
154 Synchronizing lamp
155 A-c voltmeter
156 Ammeter, exciter No. 1
157 Pilot lamp, exciter No. 1
158 D-c voltmeter
159 Pilot lamp, exciter No. 2
160 Ammeter, exciter No. 2
161 Field circuit breaker, auxiliary generator No. 1
162 Field circuit breaker, auxiliary generator No. 2
163 Ground detector lamps, 440 volt a-c bus
164 Ground detector lamps, 115 volt d-c bus
165 Ground detector lamps, 115 volt a-c bus
166 Frequency meter switch
167 Ground detector switch, 440 volt a-c bus
168 Ground detector switch, 115 volt d-c bus
169 Ground detector switch, 115 volt a-c bus
170 D-c voltmeter switch
171 A-c bus voltmeter switch
172 Field rheostat, exciter No. 1
173 Field rheostat, exciter No. 2
174 55-kw exciter selector switch, in-exciter No. 1, out-exciter No. 2
175 Circuit breaker, d-c bus

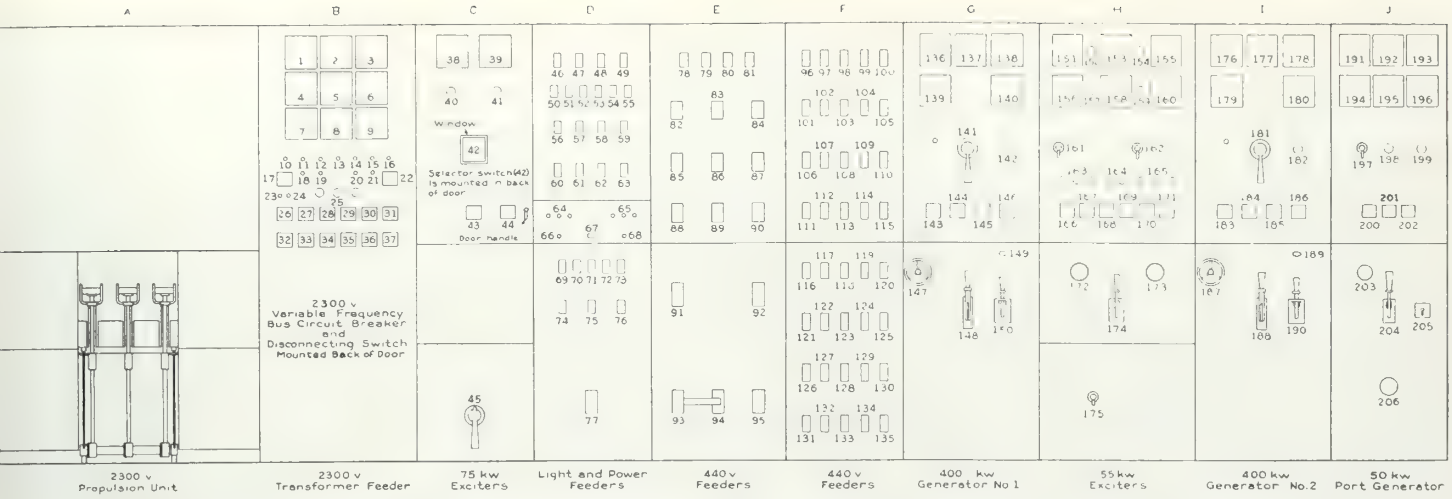
400-KW AUX.GENERATOR NO. 2

176 A-c ammeter
177 Wattmeter
178 A-c voltmeter
179 Field ammeter
180 Reverse power relay
181 Circuit breaker, aux.generator No. 2
182 Pilot lamp
183 Ammeter switch
184 Governor control switch
185 Synchronizing switch
186 Voltmeter switch
187 Generator field rheostat
188 Disconnecting switch, aux. generator No. 2
189 Regulator voltage adjustment
190 Voltage regulation, In-automatic, Out-manual

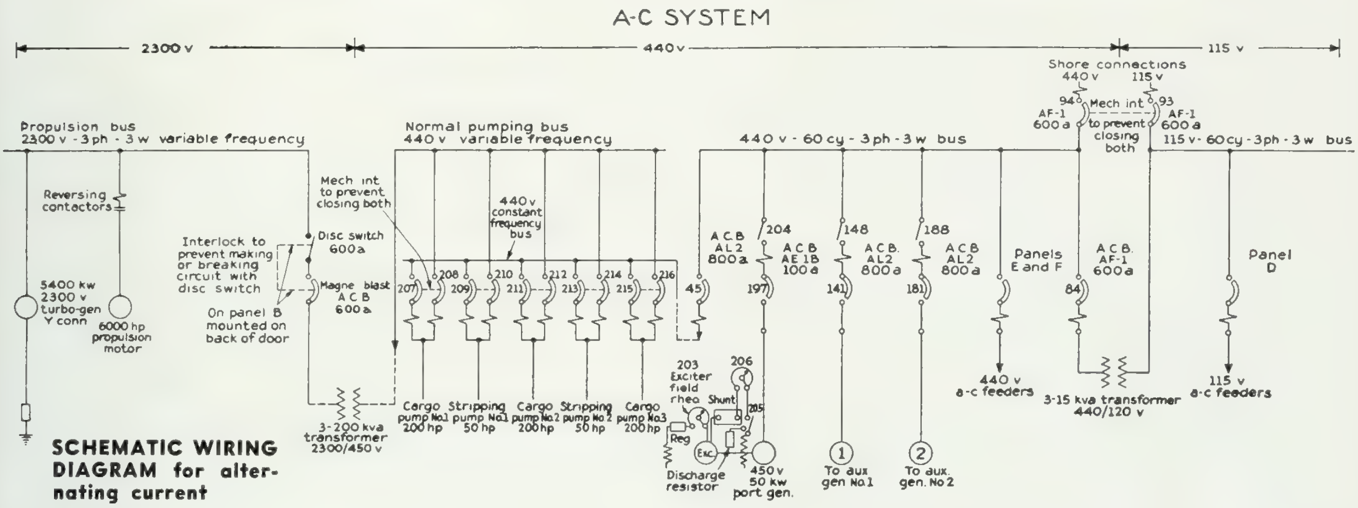
50-KW PORT GENERATOR

191 A-c ammeter
192 Wattmeter
193 A-c voltmeter
194 Field ammeter
195 Reverse power relay
196 Field voltmeter
197 Circuit breaker, port generator
198 Pilot lamp
199 Regulator voltage adjusting rheostat
200 Ammeter switch
201 Synchronizing switch
202 Voltmeter switch
203 Exciter field rheostat
204 Disconnecting switch, port generator
205 Generator field switch
206 Generator field rheostat

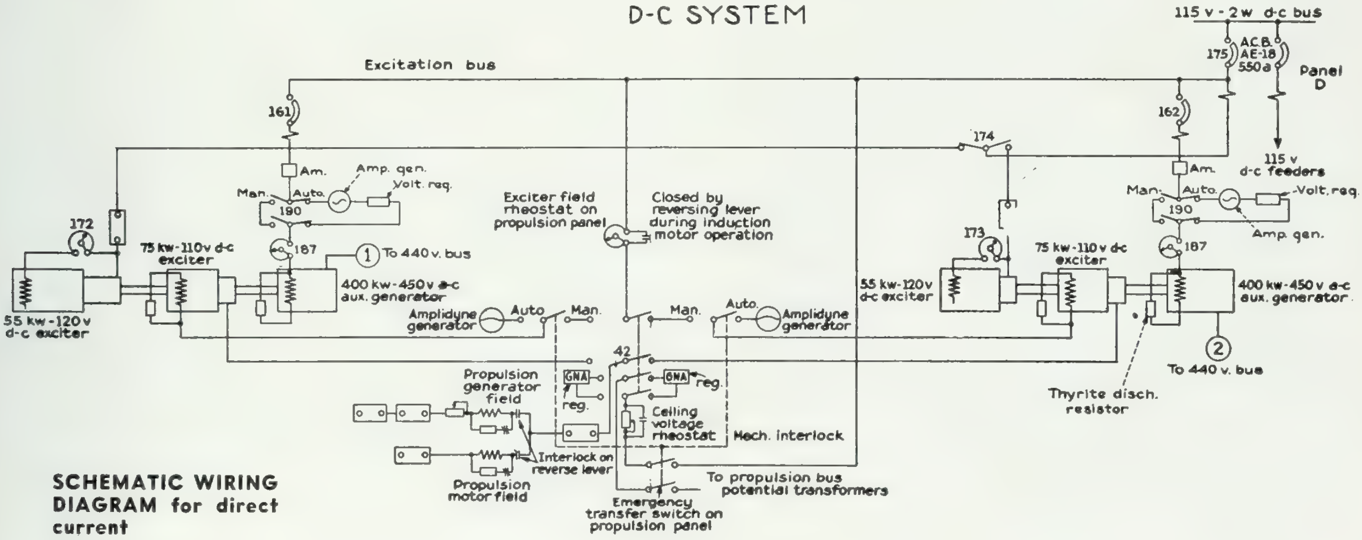
THESE NUMBERS refer to the upper reproduction on facing page.



SCHEMATIC ARRANGEMENT OF MAIN PANELS OF TURBO ELECTRIC PROPULSION SWITCHBOARD


A-C SYSTEM
2300 v
440 v
115 v
Shore connections
440 v
115 v
Mech int to prevent closing both
AF-1 600 a
Propulsion bus 2300 v - 3 ph - 3 w variable frequency
Normal pumping bus 440 v variable frequency
440 v - 60 cy - 3 ph - 3 w bus
115 v - 60 cy - 3 ph - 3 w bus
Reversing contactors
Mech int to prevent closing both
440 v constant frequency bus
Interlock to prevent making or breaking circuit with disc switch
Disc switch 600 a
Magne blast A C B 600 a
On panel B mounted on back of door
5400 kw 2300 v turbo-gen Y conn
6000 hp propulsion motor
3-200 kva transformer 2300/450 v
Cargo pump No.1 200 hp
Stripping pump No.1 50 hp
Cargo pump No.2 200 hp
Stripping pump No 2 50 hp
Cargo pump No.3 200 hp
A C B AL 2 800 a
A C B AE 1B 100 a
A C B. AL 2 800 a
A C B AL 2 800 a
Panels E and F
A C B. AF-1 600 a
Panel D
203 Exciter field rheo
Shunt
Reg
Exc
Discharge resistor
450 v 50 kw port gen.
To aux gen No.1
To aux. gen. No 2
440 v a-c feeders
3-15 kva transformer 440/120 v
115 v a-c feeders

SCHEMATIC WIRING DIAGRAM for alternating current


D-C SYSTEM
115 v - 2 w d-c bus
A.C.B. AE-1B 550 a
Panel D
115 v d-c feeders
Excitation bus
Am.
Amp. gen.
Volt. reg.
Man.
Auto.
75 kw - 110 v d-c exciter
400 kw - 450 v a-c aux. generator
To 440 v. bus
55 kw - 120 v d-c exciter
Exciter field rheostat on propulsion panel
Closed by reversing lever during induction motor operation
Amplidyne generator
Propulsion generator field
GNA
reg.
Ceiling voltage rheostat
Mech. interlock
Interlock on reverse lever
Propulsion motor field
To propulsion bus potential transformers
Emergency transfer switch on propulsion panel
Thyrite disch. resistor

SCHEMATIC WIRING DIAGRAM for direct current

more than one main cargo pump is to be used. Since no provision is made for reducing the frequency of the auxiliary generators, it will be necessary to close partially the discharge valve on the pumping system to keep the discharge pressure on the oil lines within allowable limits.

The switching arrangement provided for the cargo-pump motors is such that one or two cargo-pump motors can be operated at 60 cycles from the constant-frequency bus, and at the same time, the remaining pump motor can be operated from the variable-frequency bus, at any frequency between 50 and 60 cycles. This provision allows one or more pumps to handle heavy oil or water ballast while the remaining pumps are being used for gasoline or light oils. In case of emergency and in case of failure of the autotransformer of the compensator of the cargo pump motors, one cargo pump motor can be started in addition to a generator load of 200 amperes from the constant-frequency bus, with the two auxiliary generators in parallel.

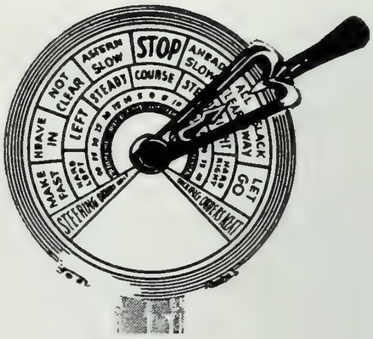
2300-Volt Transformer Feeder, Panel B

Control for the cargo and stripping

(Page 78, please)

Steady as you go!

KNOWLEDGE IS THE STRAIGHT COURSE TO ADVANCEMENT



A DEPARTMENT FOR DECK OFFICERS

by "The Skipper"

Questions Welcomed. Just Address "The Skipper," Pacific Marine Review, 500 Sansome Street, San Francisco, California

General Average

QUESTION

What is meant by the term "general average?"

ANSWER

When a vessel or its cargo is lost or damaged during a voyage, the loss or damage is known as **average.**

Should the master of a vessel deem it necessary, in order to avoid some common and imminent peril, to deliberately sacrifice some part of the ship or cargo for the benefit of all concerned in the maritime venture, the loss occasioned by such voluntary sacrifice is called **general average.** The owners of the property benefited must make contributions to the owners of the sacrificed property up to a point where all the losses are in the same proportion.

Loss or damage to the ship or cargo due to unavoidable accident, rather than to a voluntary sacrifice, is known as **particular average.**

The latter is a loss happening to the ship or cargo which is not to be shared by contribution among all those parties interested in the venture, but must be borne by the owner of the subject to which it occurs. In other words, the material loss must be borne by the party upon whom it falls. It is thus called **particular average** in contradistinction to **general average.**

QUESTION

What is the origin of the doctrine of general average?

ANSWER

The principle of general average is one of the oldest doctrines of maritime law. It is derived from the Rhodian law and adopted into the Roman jurisprudence, and thence entered into the general maritime law. The rule appears to have been adopted into the English law without the intervention of any statute. It was anciently applied where goods were thrown overboard (jettisoned) to lighten a vessel in bad weather, or to increase her speed in case of pursuit by hostile vessels. The doctrine of general average can be traced back and found in the **Laws of Oleron** as they existed in the Twelfth Century. It is interesting to note that the principle of general average is a distinct part of the maritime, as distinguished from the municipal law of the land; it has never been extended beyond the spirit and principles of the Rhodian and Roman laws.

The principles of general average have been codified in the various enactments of the **York-Antwerp** Rules.

QUESTION

What are the York-Antwerp Rules?

ANSWER

These rules were formulated in 1890 by the Association for the Reform and Codification of the Laws of Nations. They are the result of conferences of mercantile interests from several countries, in the interest of uniformity of law. The Marine Insurance Act of 1906 contains the only statutory definition of General Average. They have no statutory authority. Since 1890 the York-Antwerp Rules have, in general practice been inserted in bills of lading, marine insurance policies and other shipping documents. The Rules determine the interests which may be called upon to contribute the expenses incurred by the voluntary sacrifice, such as expenses at the port of refuge, the wages and maintenance of the crew at the port of refuge, and other incidental expenses. The rules of 1890 were revised at Stockholm in September, 1924.

In the United States, we have adopted an American version of the 1924 rules, which most American shipowners and cargo interests agree upon and stipulate in the bill of lading. The adjustment of a general average claim is made by specialists who are known as general average adjusters. This is a highly technical operation and, as a general rule, is costly and prolonged. It is the duty of the shipowner or his representative to cause a general average adjustment to be made and to retain cargo at the port of destination until its contribution is paid or security for payment is given in the form of a bond for an amount sufficient to cover the estimated amount of the contribution. The custom requiring an **average bond** to be made developed from the fact that when a rescued vessel arrives at the port of destination, where the cargo ought to be delivered, the amount of the contribution due from the different owners of the cargo cannot be ascertained at once, so that payment may be made before delivery. The amount due from each cargo owner must be computed, and in order to retain to the shipowner the benefit of his lien pending the computation of the contributions, and to allow the consignees to get their cargo at once, an **average bond** is taken from the consignees, by which they agree to pay their share of the contribution. The cargo lost is taken at the price it would have brought at the port of destination, less the amount of freight thereon. When freight is not payable upon goods not delivered, in proving the foreign value, the owner of the goods jettisoned must deduct any expense from their value that the jettison has saved him, including freight.

The freight, meaning the ship's earnings for carrying the cargo, is a tangible asset which must contribute its share. A cargo sacrifice benefits not only the shipowner's ship but it usually benefits her earning capacity. This is clear enough if the ship is enabled to complete her voyage and earn her freight for the return voyage. Thus, where one gross sum is paid under a charter party as freight for the round voyage out and home again, and the general average sacrifice occurs on the outward voyage, the whole freight must contribute. So, where there is a continuous voyage, under a charter party which binds a vessel to go out to a port of loading, load there, and return with cargo from that port, which is the only cargo she carries for a freight, and the freight is only payable upon the safe delivery of the cargo, the charter freight must be taken into consideration as a contributing interest where the loss occurs on the outward voyage, the doctrine being that the vessel while on the outward voyage was earning the homeward freight.

QUESTION

What the the essentials of a general average act?

ANSWER

The United States Supreme Court has summed up the essential elements necessary to sustain a general average claim to be:

(1) A common danger; a danger in which ship, cargo and crew all participate; a danger imminent and apparently "inevitable" except for voluntarily incurring the loss of a portion of the whole to save the remainder.

(2) There must be a **voluntary jettison,** or sacrifice, or casting away, of some portion of the joint concern for the purpose of avoiding this imminent peril or, in other words, a transfer of the peril from the whole to a particular portion of the whole.

(3) This attempt to avoid the imminent common peril must be successful.

QUESTION

What person can order the sacrifice to be made?

ANSWER

The proper person to decide upon the making of the sacrifice is the master or commanding officer of the vessel. It must be made by his voluntary act. However, the sacrifice may be made by a person who has lawful possession of the vessel and exercises the authority of a master over it, either by appointment or consent of the owner, or by operation of law.

The master, of course, must exercise proper discretion in the matter and the manner of making the sacrifice; the United States Supreme Court has said:

"Masters are often compelled, in the performance of their duties, to choose between the probable consequences of imminent perils threatening the loss of the ship, cargo and all on board, and the sacrifice of some portion of the associated interests in their custody and under their control, as the only means of averting the dangers of the impending peril in their power to employ. They must elect in such an emergency, and if they, in the exercise of their best skill and judgment, decide that it is their duty to lighten the ship, cut away the masts, or to strand the vessel, courts of justice are not inclined to overrule their determinations. Owners of vessels are under obligation to employ masters of reasonable skill and judgment in the performance of their duties, but they do not contract that they shall possess such qualities in an extraordinary degree, nor that they shall do in any given emergency what, after the event, others may think would have been best. From the necessity of the case, the law imposes upon the master the duty, and clothes him with the power, to judge and determine at the time, whether the circumstances of danger in such a case are or are not so great and pressing as to render a sacrifice of a portion of the associated interests indispensable for the common safety of the remainder. Standing upon the deck of a vessel, with a full knowledge of her strength and condition, and the state of the elements which threaten a common destruction, he can best decide in an emergency what the necessities of the moment require to save the lives of those on board and the property entrusted to his care;

and if he is a competent master, if an emergency actually existed calling for a decision whether such sacrifice was required, and if he appears to have arrived at his conclusion with due deliberation, by the fair exercise of his own skill and judgment with no unreasonable timidity, and with an honest intent to do his duty, it must be presumed, in the absence of proof to the contrary, that his decision was wisely and properly made."

Owing to the fact that the doctrine of general average is purely maritime in its nature, and is effective only under the maritime law of nations, if the sacrifice is made by strangers to the maritime venture, such as port officials or municipal authorities, without the concurrence of the master or representative of the owner, it will not give rise to a right of general average contribution. However, where the master or other representative of the owner summons aid from municipal authorities and they assist in carrying out his orders, then sacrifices made by local authorities are subject to general average.

QUESTION

Are passengers' and crews' baggage and personal effects liable to a lien for contribution in general average?

ANSWER

No, they are not liable to a contribution. Rule 17 of the York-Antwerp Rules reads, in part, "Passengers' luggage and personal effects, not shipped under a bill of lading, shall not contribute in general average." Neither are the wages of the master and the crew, their personal effects and the apparel, jewelry and baggage of passengers subject to a general average contribution.

QUESTION

Can there be a claim for general average, when only life, and not property, is saved by the common sacrifice?

ANSWER

No, at sea it is a duty imposed upon us to render assistance to our fellow man. One cannot conceive a ship line's claim upon its own passengers for saving them from peril, even if the peril should be through no fault of the ship. The cases which deny a vessel a salvage award for rescuing its own cargo from danger are a complete analogy for denial of general average contribution from the ship's own passengers.

QUESTION

What is the effect of unseaworthiness of the vessel upon a claim for general average?

ANSWER

The shipowner is not entitled to a contribution in general average if his vessel was unseaworthy at the commencement of the voyage.

QUESTION

How does negligent navigation upon the part of the ship's officers affect the shipowners' claim for a general average contribution from the cargo interests?

ANSWER

Section 3 of the Harter Act, which was passed in 1893, provides that if the owner of a vessel exercises due diligence to make his vessel seaworthy in all respects at the commencement of the voyage, the vessel and her owner shall not be liable for errors in navigation and management of the vessel.

Upon the strength of this provision in the Harter Act, the shipowners have inserted a clause in the bill of lading stating that the cargo interests will contribute with the shipowner in general average if a sacrifice should become necessary because of an error in navigation or management, or because of unseaworthiness, **provided that the shipowner should have exercised due diligence to make the ship in all respects seaworthy and properly manned, equipped and supplied at the commencement of the voyage.** This clause is known as the **Jason Clause.**

QUESTION

Does the Jason Clause have force of Law?

ANSWER

Yes, the **Jason Clause** was passed upon and made valid under the Harter Act by the Supreme Court of the United States in the case of the ship Jason. Following this decision, the clause became known as the "Jason" Clause. In passing upon the validity of this clause, the United States Supreme Court said: "In our opinion, so far as the Harter Act has relieved the shipowner from negligence of his master and crew, it is no longer against the policy of law for him to contract with the cargo owners for a participation in general average contribution growing out of such negligence; and since the clause contained in the bill of lading of the **Jason's** cargo admits the shipowner to share in general average only under circumstances where by the act he is relieved from responsibility, the provision in question is valid, and entitles him to contribution under the circumstances stated." This agreement known as the **Jason Clause** is uniformly sustained by the courts.

YOUR PROBLEMS ANSWERED

(Continued from Page 75)

pumps is located on this panel. The magne-blast circuit breaker which feeds the 2300/450-volt transformer supplying the variable frequency pumping bus is located inside the unit, and access may be had from either the front or back, respectively, by means of the full-length hinged panel or the split doors. The disconnecting switch may be operated by opening the front door and inserting the handle in the place provided. To do this, however, the flap covering of the operating shaft must be raised, and this trips the circuit breaker if it is in the closed position. The double doors in the rear are equipped with an electrical interlock, which trips the propulsion motor and generator field contactors and also the magne-blast air circuit breaker when the doors are opened. This cuts down to residual the voltage on the 2300-volt bus located inside the doors and de-energizes the variable frequency pumping bus. The 2300/450-volt transformer is protected against low frequency by means of an underfrequency relay (9) mounted on Panel B. This will close its contacts at frequencies less than 45 cycles and trip the magne-blast air circuit breaker.

News FROM THE PACIFIC NORTHWEST

by R. H. Calkins

Two New Piers For Seattle

Costing $3,000,000, two piers for Army use will be constructed on the old Skinner & Eddy shipyard site on the Seattle waterfront, it was disclosed by the Army Engineers and the Port of Seattle.

The Port Commission will build one of the piers of its own design, and the Army will build the other pier. The Government will use both units for the duration of the war.

Present military requirements and long-range commercial needs, will be considered in the design of the piers. Each pier will be 400 feet in width, but one will be 1,000 feet long, and the other 500 feet.

THREE MINE SWEEPERS down the ways at Associated Shipyards, Harbor Island plant of the company, with colorful Navy Day ceremonies. They are two steel vessels, H.M.S. Celerity and H.M.S. Chamois, building for the British Navy, and the wooden vessel YMS-287 for the U. S. Navy.

New Drydock Section Launched

The central section of a huge drydock for the Navy was launched October 24 by the **Everett Pacific Company** in Everett, Wash. It was a sideway launching and proved to be one of the most spectacular ever witnessed in the Pacific Northwest. The huge section of the drydock made a mighty splash as it struck the water, but the workmen who rode down on its decks, scarcely felt a jar.

Congressman Henry M. Jackson, who made the principal address at the launching, said that additional navy contracts for $15,000,000 in ships, have been awarded the company.

Elizabeth Ann Barker, 10-year-old daughter of a shipwright, christened the drydock the Rebuilder.

Oregonship's 95th Liberty

The Oregon Shipbuilding Corporation at Portland, Oregon, launched its 95th Liberty vessel, the Joseph Gale, on Armistice Day. The Maritime Commission awarded the plant another star on the merit flag for its shipbuilding record. The yard's 94th ship, the James B. Eades, and another tank-landing craft, were launched a few days earlier.

Mine Sweeper Launched

The Winslow Marine Railway & Shipbuilding Company November 8 launched the steel mine sweeper Right, building for the United States Navy. The vessel was christened by Grace Dammen, 10-year-old daughter of Alfred Dammen, lead welder in the plant. The Winslow yard previously had launched two sister vessels of the Right, the Pursuit and Requisite. The launching ceremony included a flag-raising in the yard's War Bond drive, in which 90 per cent of the employees have subscribed. Stanley A. Griffiths, vice president of the company, spoke at the launching.

High Standards At Isaacson

For the maintenance of high standards, the **Isaacson Iron Works** of Seattle has received six flags and in the future may have to be content with stars added twice yearly. Two of the flags were awarded by Harold B. Taylor of the United States Maritime Commission. They are the Com-

LIBERTY STEERING ENGINE. Reputed to be the largest shipment of its kind in the nation, the Webster-Brinkley Company of Seattle recently forwarded 18 steam steering engines to Oregonship yard at Portland. The picture shows the departure of the 18th engine, and with it, left to right, are: George Gunn, Jr., president of the firm; Harold Hartman, general manager; and Arthur A. Murphy, assistant to the president of the Union Pacific Railroad Company.

mission's "M" burgee and the Victory Fleet flag. The plant recently won the Army and Navy "E" flags, later combined into one, and two treasury flags for subscriptions to War Bonds. Add the Stars and Stripes and the yard presents a gala appearance.

Seattle-Tacoma Executive Shift

O. A. Tucker of Seattle has assumed new duties as vice president and general manager of the Tacoma Division of the **Seattle-Tacoma Shipbuilding Corporation,** replacing Walter L. Green, who was transferred to Seattle as vice president and assistant to President R. J. Lamont. Ernest B. Colton of Seattle has taken Tucker's place as general manager of the Seattle yard.

Mr. Green was with the Luckenbach Steamship Company a number of years and was vice president of the American Bureau of Shipping in New York when he joined the Seattle-Tacoma company.

Ferries Busy

J. F. Boles, owner of Harbor Island Ferries, operating from the foot of Washington Street in Seattle, is carrying between 2000 and 3000 shipyard workers daily to the Harbor Island plants of Todd Seattle Dry Docks, Inc., and the Seattle-Tacoma Shipbuilding Corporation. The Boles fleet of nine vessels operates to both Plants A and B of the Seattle-Tacoma corporation.

Barge Keels Laid At Anacortes

Anacortes Shipyards, Inc., laid the keel for the first of six 4000-ton wooden barges for the United States Maritime Commission November 12. The barges will be ocean-going craft, 280 feet in length. The working plans were prepared by H. C. Hanson, Seattle naval architect. W. P. Yaw of Portland, Ore., president of the company, says that he hopes the firm can continue in shipbuilding operations after the war. Mr. Yaw said the new plant's program requires the building of barges faster than they ever have been built before. Other company officials, also from Portland, are D. M. Drake and E. E. Carroll, vice presidents, and L. P. Clark, treasurer.

New Production Manager

O. W. Panter, new production manager of the **Martinsen Shipyards** at Anacortes, is a veteran naval architect and marine engineer, who was appointed by M. H. Martinsen, president of the company, to take complete charge of the plant. Mr. Panter's experience goes back to the days when he was associated with the Seaborn and Foundation shipyards at Tacoma in 1918. He has designed and supervised the construction of seaplane tenders, mine sweepers, patrol boats, tugs, and wooden and steel freighters up to 320 feet.

Additional equipment soon will be installed in the Martinsen Shipyards, which will make it possible for the firm to take on larger contracts. The yard is building five barges for the Coast Guard and motor launches for the Army Transport Service.

Quintuple Launching

In the first quintuple launching of ships in the Pacific Northwest, the **Northwestern Shipbuilding Company** at Bellingham November 15, sent down the ways five 114-foot freight and passenger vessels for the Army.

The launching was so arranged that the five vessels formed a Victory "V" when in the water. The five ships were completed two months ahead of schedule and were launched with engines installed.

The guest of honor was the yard's Gold Star mother, Mrs. William Eggleston, who lost two sons in the present war. Her husband is one of the workers in the plant.

The sponsors for the vessels were Miss Dorothy Hanson, daughter of H. C. Hanson, Seattle naval architect, who designed the five craft; Miss Marilyn McKay, daughter of Maj. William O. McKay of Seattle, chairman of the board of directors and general manager of the shipbuilding company; Miss Patricia Louise Gilbert of Bellingham, daughter of J. N. Gilbert, a member of the board of directors of the company; Mrs. Marjorie Jean Hughes, also of Bellingham, daughter of Charles Taylor, superintendent of the yard, and Mrs. Marian D. Morhouse, daughter of Brig. Gen. Eley P. Denson, commanding general of the Seattle Port of Embarkation.

Mrs. Morhouse is the wife of Lieut. Col. Charles H. Morhouse, Medical Corps, United States Army, who was with Gen. Douglas MacArthur on Bataan Peninsula and escaped with him to Australia.

Treasury Flags for Yard

Two United States Treasury flags were raised over the Lake Washington Shipyards November 8 as a mark of recognition to employees of the plant who are buying war bonds.

Presented by A. Linus Pearson, volunteer War Bond worker, the first flag, signifying that at least 90 per cent of the employees are buying bonds, was accepted by Glen Warn of the Electrical Department, who signed up more than 700 men.

Phyllis Erlandson, winner of the contest among the girls of the personnel office, accepted the second flag.

Salvage Vessel

The 183-foot salvage vessel Lincoln Salvor, building for the British Navy, was launched November 14 from the plant of the **Bellingham Marine Railway & Boatbuilding Company.** The vessel was christened by Miss Prudence Talbot, daughter of A. W. Talbot, owner of the shipyard.

The Lincoln Salvor went into the water bow first. Another salvage vessel for the British navy is building in the same yard. The vessels, built of steel and wood, will be of 11,000 tons each, and will cost a total of $1,105,000.

Two Rescue Boats

The **Sagstad Shipyard** on Lake Union, Seattle, has launched two off-shore aircraft rescue boats for the War Department, and will put two more into the water soon. The plant has laid the keel for the first of three tugs for deep-sea towing for the Army. The tugs will be 127 feet long and will cost between $800,000 and $900,000.

S. E. Sagstad, owner of the yard, has been a Seattle shipbuilder for 27 years. The plant was established in 1916, and at first constructed fishing vessels. To take part in the war effort, 150 feet of waterfront on Lake Union was added to the yard, and new buildings constructed.

Sagstad's first yard was on the Lake Washington Ship Canal, where he started to build fishing vessels in 1905.

Personal Gleanings

Walter D. Brennan, formerly Northwest manager of the Pacific-Atlantic Steamship Company with headquarters in Seattle, who was a lieutenant in the Navy, has been transferred to the Army Transport Service, and given the rank of major. He has been assigned to foreign duty.

J. D. Holbrook, well-known on the Seattle waterfront, has resigned as an examiner for the Interstate Commerce Commission to accept a position on the staff of the United States Maritime Commission in San Francisco. As his last tour of duty in Seattle, Mr. Holbrook spent nearly four weeks checking up the accounts of companies engaged in interstate commerce.

Capt. William G. Gregory, retired shipmaster, and well-known professional racing yachtsman, is conducting a course in celestial navigation at Seattle College. Captain Gregory's experience includes three years as an instructor in the British Air Force, 18 years of deep-water sailing and three years as instructor in nautical astronomy and air navigation at the Merchant Marine School and Aviation Training Academy of New York City.

Lieut. Harold R. Shaw, R.N.R., and **Lieut. D. Alex Pask, R.N.V.R.,** are stationed in Seattle with duties connected with the shipbuilding program. Lieutenant Shaw is British naval liaison officer for shipbuilding for the British Navy.

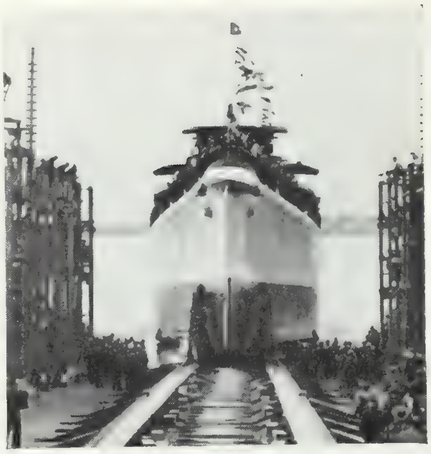
Capt. John P. Anderson, who sailed the Chinese junk Tai Ping across the Pacific in 1939, is a ship's rigger in the Todd Shipyards in Seattle. Captain Anderson was accompanied by his wife on the voyage of 105 days from Shanghai to British Columbia. The Tai Ping was plagued by typhoons during the long voyage from the China Coast. She stranded on the rocks at Ocean Falls, B.C., and sank in 120 feet of water.

Shipping Personals

The city ticket office of the Alaska Steamship Company has been moved from 1220 Fourth Ave., in the Olympic Hotel Building, to Pier 2 on the Seattle waterfront. The office is in charge of **K. A. Cross,** assistant general passenger agent, and his staff.

E. L. Matteson, advisor to China Defense Supplies, Inc., with headquarters in Karachi, India, arrived in Seattle October 25 after a 12,000-mile trip by airplane. Matteson, a former Seattle shipping man, was private secretary to the late A. F. Haines, vice president and general manager of the old American Mail Line. Matteson entered the service of the line in 1916 and two years later was sent to the Orient. He was agent in Vladivostok, Darien, Shanghai, Hongkong and Kobe, and then entered the service of the American President Lines in the Orient. He was loaned to China Defense Supplies, Inc., and sent to Karachi. After a visit with old friends in Seattle, Matteson went to San Francisco for reassignment by the American President Lines.

Lieut. Comdr. Erik G. Froberg, U.S.N., who formerly was superintendent of the old American Mail Line and port captain of the Pacific Northwest Oriental Line, died November 3 after a brief illness. A colorful figure on the Seattle waterfront, Captain Froberg took to the air in the performance of his duties and hopped from port to port in his own plane. He frequently flew to California for conferences. His licenses included those of master of ocean-going vessels and pilot on Puget Sound, the Columbia River Bar, San Francisco, San Pedro, San Diego and Honolulu harbors.



EIGHTH STEEL SEAPLANE TENDER, U.S.S. Rehoboth, was sent down the ways of the Lake Washington Shipyards on November 8. It was sponsored by Mrs. R. P. McConnell, wife of Captain McConnell, U. S. N.

News FROM THE PACIFIC SOUTHWEST

by K. M. Walker

The Deliverer Of Liberties

When this article appears in print, California Shipbuilding Corporation will have launched and possibly delivered its 100th Liberty (EC-2) steamer. Eighteen months back, the site of this yard was a waste of sand and mud, occupied by a few shacks. Today, it is preparing for the launching of Hull No. 100, and is delivering ships at the rate of three a week.

The original contract delivery dates, as published by the Maritime Commission, called for delivery of hull No. 49 on December 8, 1942, so Calship is at least 50 ships ahead of its original schedule.

Hull No. 100 is to be christened Benjamin Ide Wheeler in honor of the great president of the University of California, who took charge of that institution just before the turn of the century and transformed it into one of the world's great universities.

S.S. BENJAMIN IDE WHEELER, Calship's 100th Liberty ship, gets her 70-ton nose spotted.

Mrs. Robert Gordon Sproule, wife of the current U.C. president, will sponsor the vessel, and the education experts of California will be there to do honor to their great predecessor.

A donor, who prefers to remain anonymous, presented Calship with a bottle of century-old champagne, which will be used in the christening ceremony. This bottle, wrapped in fine wire mesh (to prevent splintering), and covered with braided red, white and blue ribbons, embellished with the numerals 100 in silver, has been carefully stored in the vault, awaiting the day of launching.

In October Calship launched 13, laid keels for 13, and delivered 12 Liberty steamers. On the occasion of the launching of the S.S. William Eaton on November 7, Calship was awarded the fourth gold star for its Maritime Commission "M" Burgee. Commission officials announced that for the fourth month, Calship had been national champion in Liberty ship production.

25 Years At L. A. Harbor

Harry J. Summers, principal surveyor at Los Angeles for the American Bureau of Shipping, completed on November 14 his 25th year at the harbor in the service of that great ship classification organization. Reminiscing, he recalled that during World War I, the staff of the Bureau at Los Angeles Harbor was composed of five men. Today, there are 12, and he could use six more qualified men if he could find them.

Mr. Summers predicts that before long shipbuilding will discard rivets entirely, and attributes present records in shipbuilding to the recent great improvements in the art of welding.

The Propeller Club, Port of Los Angeles, on November 19 made Harry Summers their specially honored guest at their luncheon meeting in recognition of his long service.

The first ship of the state-owned Argentine Line was in Los Angeles the second week in November loading cargo and passengers for Buenos Aires. This line is represented on the Pacific Coast by the Moore-McCormack Lines. Duncan Haynes, manager of the Flota Mercantile Del Estado who represent the Argentine Line at New Orleans, was in Los Angeles to observe the handling of the ship.

Under new regulations, Los Angeles maritime control area has been established from Point Dume to the northwesterly point of Santa Catalina Island and to include the northern shore of that island to Dana Point on the mainland.

Under the regulations, no vessel not proceeding under United States naval or other U. S. authorized supervision shall enter or navigate the waters of the said maritime control areas except during daylight when good visibility conditions prevail, and then, only after specific permission has been obtained.

Second Concrete Tanker Launched

At 11:00 a.m., November 11, with the reading of President Roosevelt's Armistice Day proclamation, the reinforced concrete oil tank barge Concrete No. 2 was launched at the plant of the Concrete Ship Constructors at National City, California, just thirty days after the launching of Concrete No. 1. The builders are now hitting their stride, after much research, exhaustive tests of materials and concrete mixtures, and considerable development of original methods. From now on, their construction record should show increasing acceleration up to the limit commensurate with the proper curing of concrete.

The master of ceremonies, Fred A. Sykes, gave an interesting history outline of the concrete vessels built during the last war, some of which are still afloat and rendering service, and expressed the hope that the improvement in quality of materials, the lessons learned in the handling of concrete and the advanced design of these vessels will result in ships capable of rugged service through a long life.

The Sweetwater High School Band opened the ceremony with the playing of national anthem, following which the Rev. Harold Gerrard gave the invocation. Following Mr. Sykes' introduction of guests and brief talk on the history of concrete vessels, the christening was performed with Mrs. C. M. Elliott as sponsor, Mrs. Gregory Smith matron of honor and little Miss Gerry Ann Eisenman as flower girl.

Sixth Transport Launched At Lynch Plant

Workers at the Lynch Shipbuilding Company paused briefly on Friday, October 23, to watch the launching of their sixth wooden coastal transport. Thirteen-year-old Miss Grace Lillian Schmidt swung a hefty right to the nose of the ship; champagne sprayed generously over the launching platform while the ship seemed to recoil from the vigorous wallop and rush down the ways to its natural element, where it bobbed as if sparring for an opening.

Miss Schmidt is the daughter of Omar Schmidt, assistant plant superintendent at the Lynch Shipbuilding Company, and is a Grossmont Union High School student.

Navy Buys German Built Ship

The steel freighter Ensenada was built in 1936 in Germany for the Maviera Pro Mex., S.A., of Ensenada and has been engaged in coastwise traffic under the Mexican flag. During 1941, with the development of the frozen shrimp industry under the guidance of Abelardo Rodriguez, ex-president of Mexico, the Ensenada was equipped with duplex "Carrier" hold refrigeration. Two "Carrier" 7H6 Freon gas compressors were installed, with two 15T7 cold-diffuser units delivering cold air through ducts to the reefer compartments. These diffusers are rated at 54,000 btu each per hour and maintained the hold at zero degrees Fahrenheit. This proved a satisfactory and efficient system for the particular trade requiring refrigeration on the north-bound voyages and atmospheric temperature with package freight on the south-bound voyage.

The United States Navy has had its eyes on this efficient little motorship for some time, and has been negotiating for her purchase. These negotiations were completed to the satisfaction of the owners and the U.S. Navy on November 4. The first official act of Eliseo Ruiz Russek, new Mexican Consul at San Diego, was to turn the ship's papers over to Lt. Commander J. E. Kemmer of the U. S. Navy on board the ship. Victor Angulo, president of Naviera Pro Mex., S.A., represented the owners. The ceremony was witnessed by American and Mexican officers and seamen.

Calship's 'Best-Drenched' Sponsor

Mrs. W. K. Hopkins, wife of the Regional Director of the War Manpower Commission, splashed herself so liberally with champagne at the recent launching of the S.S. Thomas Johnson that Calship officials dubbed her the "best-drenched sponsor."

Tuna Fleet Hard Hit But Active

With two-thirds of the large, long-range tuna clippers now in the hands of the Navy, and over 500 fishermen inducted into the service, the Southern California Tuna fleet has been forced to operate with smaller vessels. However, in spite of this handicap, the tuna fleet has managed to deliver a pack only 40 per cent smaller than that of 1941. The fish are so plentiful this season that, had it not been for the drastic reduction in the number and size of the boats, the largest pack in 25 years would have been made.

EXTERIOR of the Berkeley shop of the Columbia Machine Works. Note removable panel in end wall and extension of crane tracks.

Columbia Machine Works

POPULAR MARINE ENGINEERING FIRM EXPANDS TO MEET WAR NEEDS

THE ILLUSTRATIONS accompanying this article were all made recently at the West Berkeley plant of the Columbia Machine Works. The buildings in which this plant is housed and the site on which they stand were formerly occupied by the Byron Jackson Pump Company.

Columbia Machine Works has served shipowners on San Francisco Bay for eleven years. In 1931 L. K. Siversen, then manager of sales for the Union Plant of the Bethlehem Shipbuilding Corporation, decided to go into the marine engineering repair business. As a base for operations he secured a shop on Spear Street, San Francisco—a shop that was the first plant of the United Engineering Works and at which Louie Siversen had started his San Francisco career way back in 1907. This shop he equipped with machine tools suitable for marine repairs and was soon busy fixing up steam and diesel plants for American and foreign flag shipowners.

Early this year, it became apparent that there was a tremendous call for expert machine shop work on the new ships building in the new yards on San Francisco Bay. Siversen seized this oppor-

TOP: MACHINING a group of 4″ high-pressure bronze angle valves for grease extractors for Liberty (EC-2) steamers.

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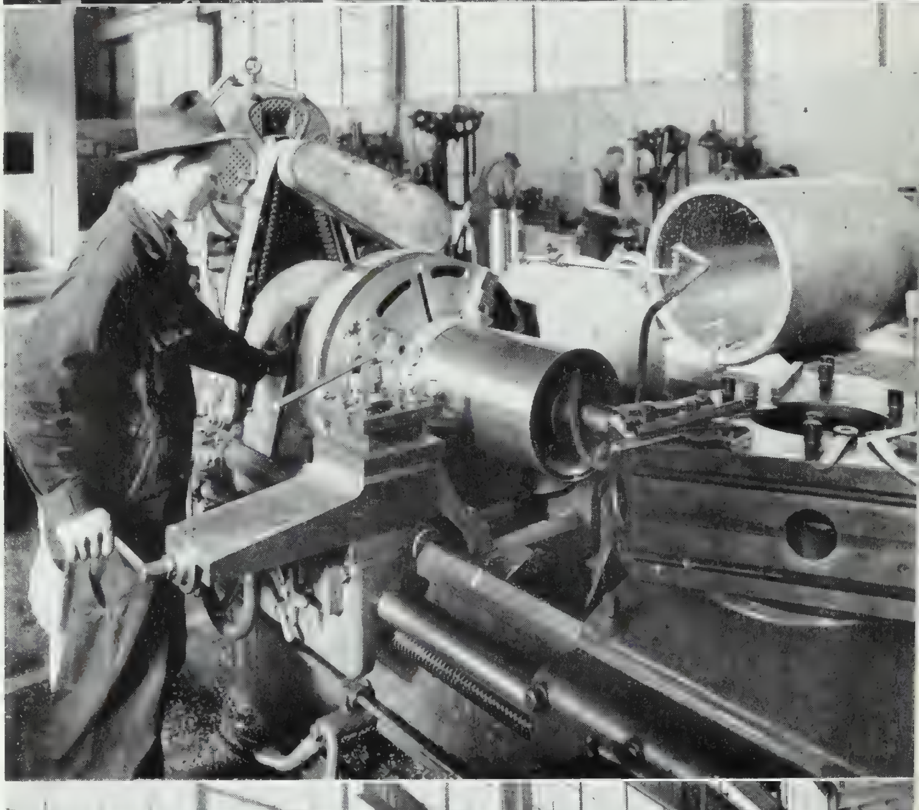

CENTER: LARGE TURRET LATHE machining bronze liners to be shrunk onto steel rudder pintles to make a bearing journal for the micarta bearings in the stern post gudgeons.

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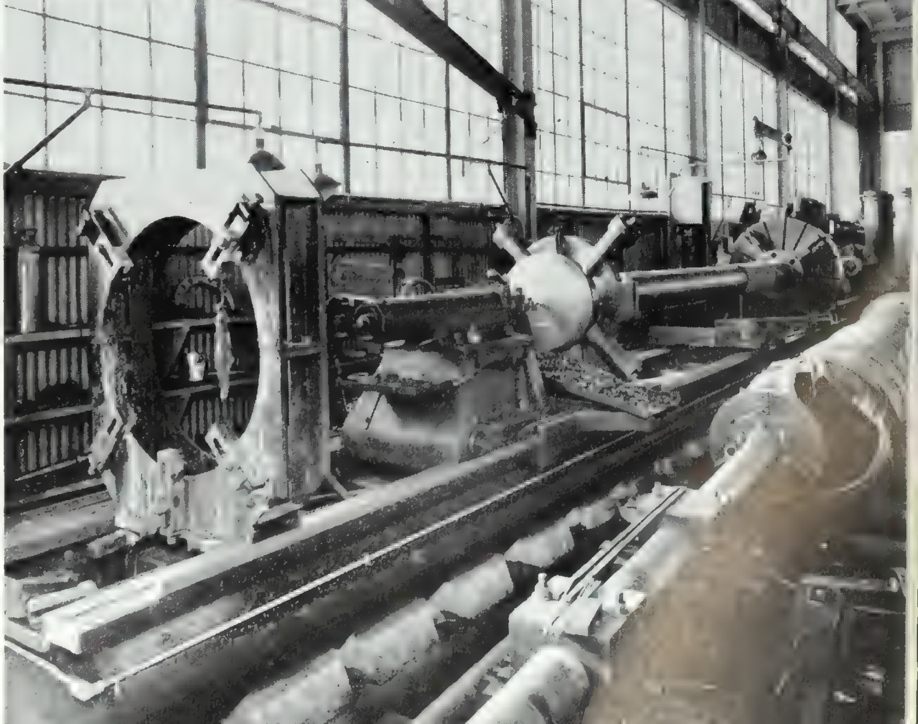


BOTTOM: LARGE LATHE machining Liberty line shafting. On floor alongside lathe is one of the 16-ton cast steel stern tubes for the C-4 type steamers and a boring bar rig for boring the seatings for the bronze liners that are fitted in these tubes to form the outboard and inboard propeller shaft bearings.

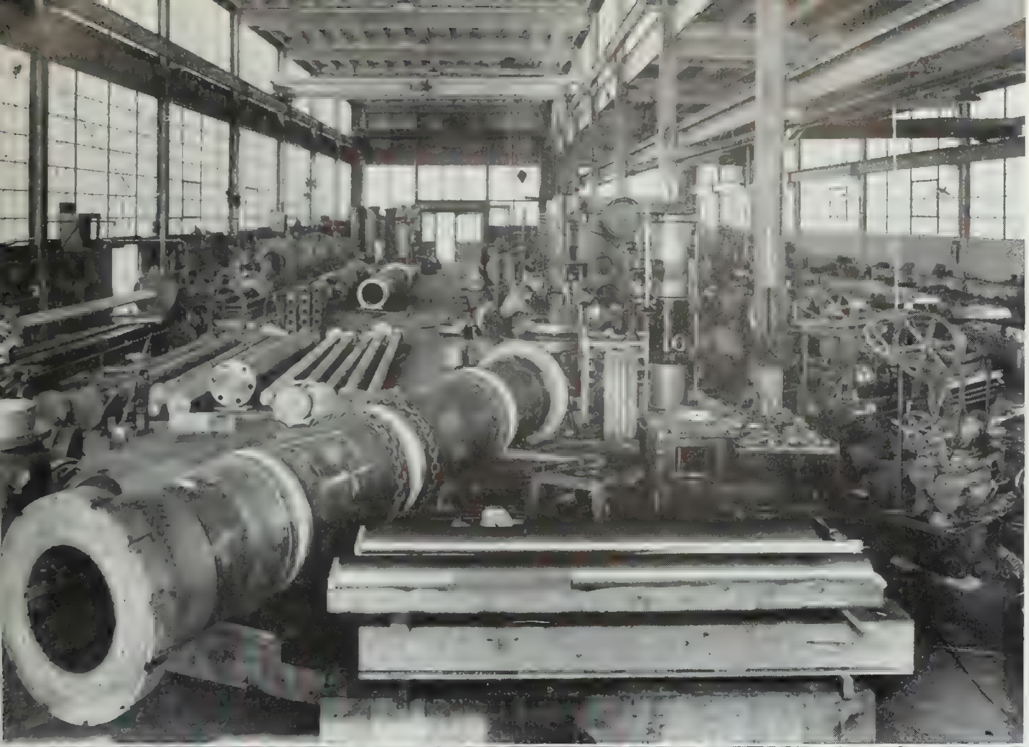
tunity and bought the machine shop and office building of the former Byron Jackson plant at West Berkeley, with sufficient ground area to take care of reasonable expansion.

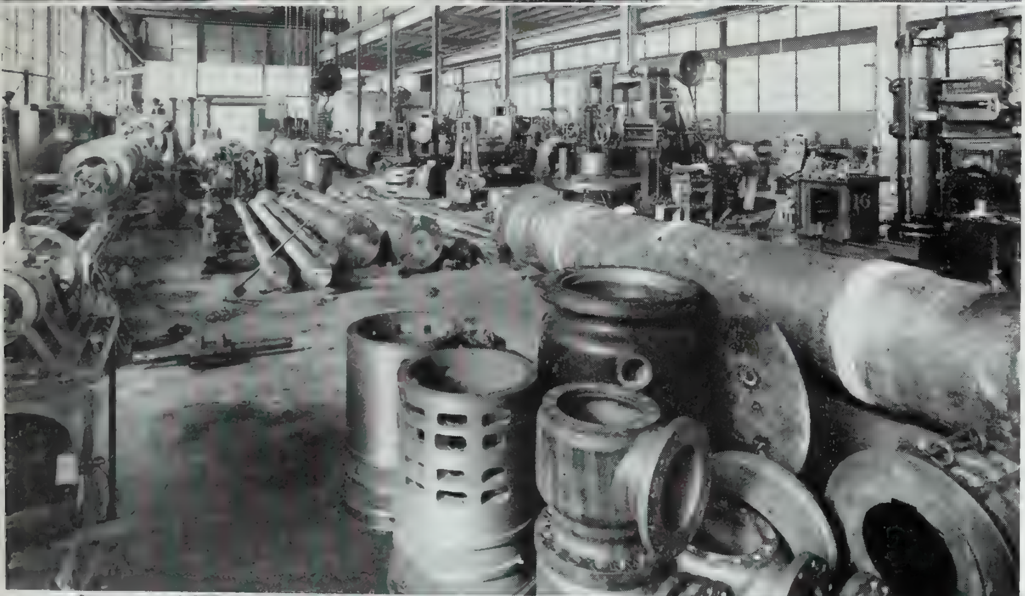
He began moving tools into this plant in July, and it speaks volumes for his organization that the moving and installation of tools and equipment were accomplished without loss of delivery time on orders and repair work on hand.

The plant in San Francisco is still in operation and, as will be seen in our illustrations, the plant at West Berkeley is full of new work.

A new building houses a fine modern wash and locker room, a large garage, and a large pattern storage loft.

The machine shop is well lighted and ventilated, adequately equipped with overhead traveling





TOP: GENERAL VIEW of the central bay of the machine shop, showing the layout of the machine tools and various types of machine work in progress.

•

CENTER: A CLOSE-UP of some of the work in the central bay. In the foreground are some large cylinder liners and some sea valves. The latter are for some special gasoline tankers building at Savage, Minnesota. In the background are some line shafts and stern tubes.

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BOTTOM: LINE SHAFTING and stern tubes for various ships.

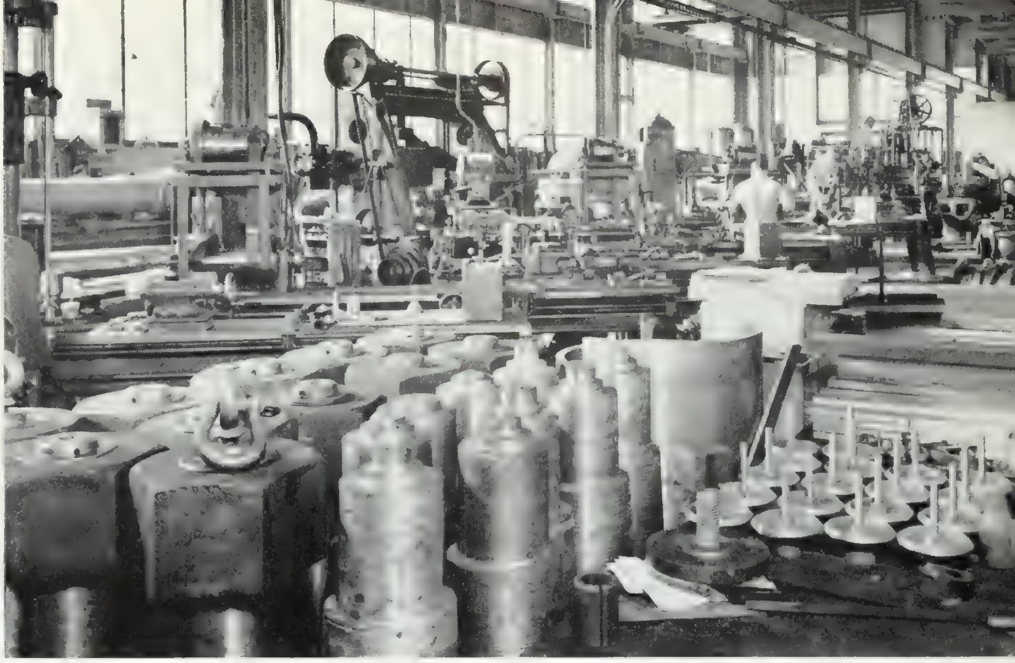
cranes, and fitted with a fine assortment of machine tools. As will be noted in the exterior view of this shop, the central bay overhead crane tracks extend outside the street entrance to the building for lifting heavy pieces from car or truck delivery.

One very interesting order on which this shop is busy comprises the stern tubes complete for the C-4 transports, now building at Richmond No. 3. These tubes are of cast steel and are cast by Columbia Steel Co. Their dimensions are impressive — 20 feet long, 52 inches outside diameter, and 16 tons finished weight. Each tube is turned to size on its outer diameter and bored to size at each end to take the outboard and inboard bearings. The outboard bearing is 7′6″ long, and the inboard 5 feet long. These bearings are bronze sleeves made in two parts in the length with dovetail joints, and lined with Westinghouse Micarta staves.

Also for the C-4 transports, Columbia is supplying all the rudder pintles. These are steel pins 11½ inches in diameter and four feet long, turned at one end for a taper fit in the boss on the rudder frame, and threaded to take the pintle nut. The parallel portion of these pintles is sheathed with a bronze sleeve shrunk on. These sleeves turn in micarta bushings fitted in the gudgeons.

Columbia Machine Works is machining all stern tubes for the EC-2 steamers (Liberties) at Richmond yard No. 2, and machining all line shafts for the same type steamers at Richmond Yard No. 1, and all propulsive shafting for the U. S. salvage vessels building at the Basalt Rock Company Yard at Napa, California. Machining line shafting, as you read it, sounds like a comparatively simple operation. But when you have finished fitting flange bolts and flange key ways, and bronze sleeves, and tapered fits to propeller hubs on U. S. Navy specifications for a set of propulsion shafting and they pass U. S. Navy inspection, you can really call yourself a marine machinist.

Another very interesting order is for 200 cast steel, bronze-fitted valves ranging from 5 to 10 inches for the Minnesota yard of Cargill, Inc. to be used in special gasoline tankers building for the U. S. Navy by that firm.



GENERAL VIEW of a part of the east bay of machine shop. Steel rudder pintles in the foreground.

Columbia is supplying a large assortment of valves for the Liberty steamers building at Richmond yards Nos. 1 and 2.

On order are three large stainless steel cylinder heads for a marine diesel engine repair.

Meanwhile the San Francisco shop is busy on miscellaneous repairs. An interesting piece of construction and assembly work carried on in this shop is the production of diesel-electric generating sets for the U. S. Navy and other Federal departments.

Many such sets are in demand for prompt delivery to furnish light and power at the many bases occupied by American armed forces. Columbia, on order from manufacturers or their agents, has: manufactured bases for engine and generator; assembled and fitted necessary piping connections for lubrication and fuel; installed necessary wiring connections for generator; and carried through specified tests. Many such generating sets are now serving at American bases in Australia, and one or two have reached the Solomons and Guadalcanal.

ONE CORNER of the neat tool room

L. K. Siversen (Louie as he is known to all his friends of the San Francisco Bay area) has an ideal background for the type of work which he is administering as the owner and manager of Columbia Machine Works. This background includes: several years at sea as a marine engineer; nine years as machinist and outside waterfront man for the United Engineering Co.—an aggressive San Francisco ship repair firm; fifteen years as manager of sales for the largest single shipbuilding and ship repair institution on the Pacific Coast; and finally, ten years of successful conduct of his own business through the worst depression in history.

To come through all this ready and eager to tackle new problems and to work overtime on war effort shows that Louie "has what it takes."

Marine Diesel Engine Liners Bored To Size

A SPECIAL JOB of work recently put through the San Francisco shops of the General Engineering & Dry Dock Company, consisted of the boring to size of a large number of marine diesel engine liners. The work was handled in a horizontal boring machine built especially for the work on these liners.

Three photographs of the machine in actual operation are reproduced herewith, Fig. 1 giving a good idea of the complete machine, while Figs. 2 and 3 are close-ups showing more clearly certain features in connection with the boring bar and cutter head.

This machine is built up on an old planer table which is itself mounted on heavy 16″ I-beams for rigid support. To these I-beams the table is secured by a series of large set screws set into counterbored seats from the top of the table, the holes then being filled flush over the heads to give a smooth table surface. The table is 16 feet long by 48 inches wide and acts as a complete bed for the boring mill.

The liners undergoing boring operations form a lot for single-acting two-cycle diesel engines of 8-cylinder type. The bore of the liners is 21 inches, the length 54 inches. There is an average of ⅜ inch of stock to be bored out of these castings all the way around. Three cuts are normally required.

The boring is done with cutter heads carrying Carboloy tipped tools in a spider head mounted on a 10¾-inch boring bar which is cast hollow and is ground to exact size from end to end to permit the cutter head to slide smoothly and without chatter as it is fed along the bar.

The drive is by a 10-horsepower variable-speed motor with range from 400 to 1600 rpm, and by suitable gearing any necessary rate of speed is available for the boring bar. This speed range runs from as low as 1½ revolutions per minute to 22 rpm. In a bore of the size under discussion the speed range available would represent a possible variation in surface speed of the boring tools equivalent to 8 feet per minute as the lower point to 120 feet per minute as the maximum rate obtainable. Consequently, this special machine unit lends itself to the handling of a considerable variety of work of generally similar character but varying in respect to diameters, type of metal and other characteristics.

Star feed is used with contacts at each revolution of the bar. The operating studs are mounted in a swinging bar or gate which can be swung out of the way when the feed screw is to be operated by hand or by rapid motion with air motor or otherwise. The screw is 5-pitch.

The bore in the liner is held to a tolerance of .002 inch, which is very close work for a job of this character.

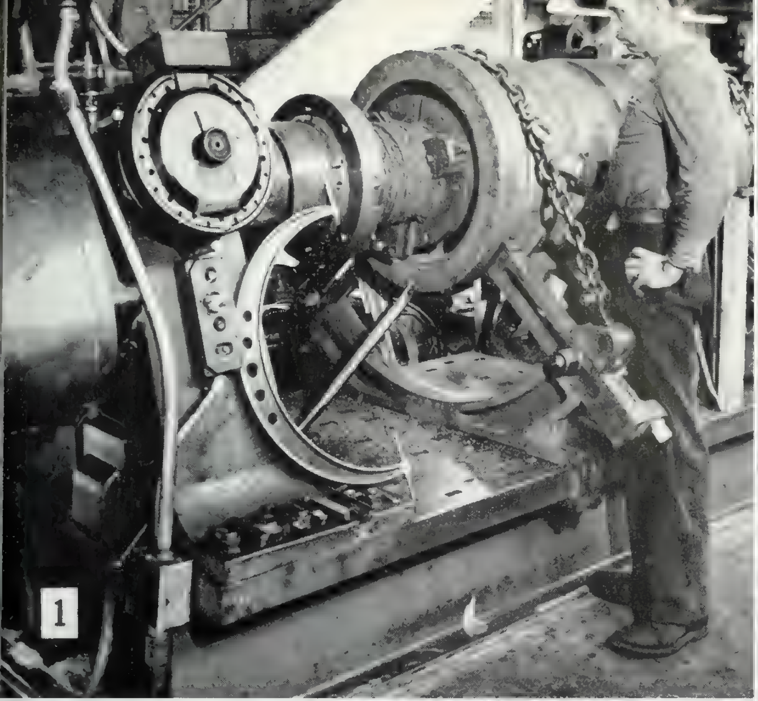
The boring bar is kept clean and free from chips and dirt during the feeding of the cutter head along its surface by a flexible guard sleeve which is dragged out automatically to cover the bar at all positions of the boring head.

The boring head is shown more clearly in Fig. 3, which also shows the protecting sleeve withdrawn or collapsed to the closest degree upon the withdrawal of the head to the starting point of the bore. The three Carboloy boring tools are mounted in separate holders at 120 degrees apart and are adjustable and secured by hollow head screws as indicated. Although these carbide tools have to cut on interrupted surfaces due to the cored ports around the center of the liners, they stand up without fracture at any rate of speed at which the boring operation is carried on.

The method of mounting the liners in their rests or supports on the bed plate, and the screws for adjustment for position and chains for clamping the liners securely, are all brought out clearly in the different views.

Another line of heavy diesel parts handled in the plant is represented by the casting shown in Fig. 4, a 10-ton gray iron unit cast by Macaulay Foundry, Berkeley. This casting is ready to be machined, and is the lower main engine cylinder head for a big marine diesel. The bore is 30-1/16 inches. The bearing castings at the side in this photograph are spring units for line shaft which will be prepared for babbitted shells.

Another view, Fig. 5, shows a job on the company's openside planer. This casting is a bed plate for a specially-designed crank shaft turning lathe. Four of these machines are under construction for a prominent engine manufacturer.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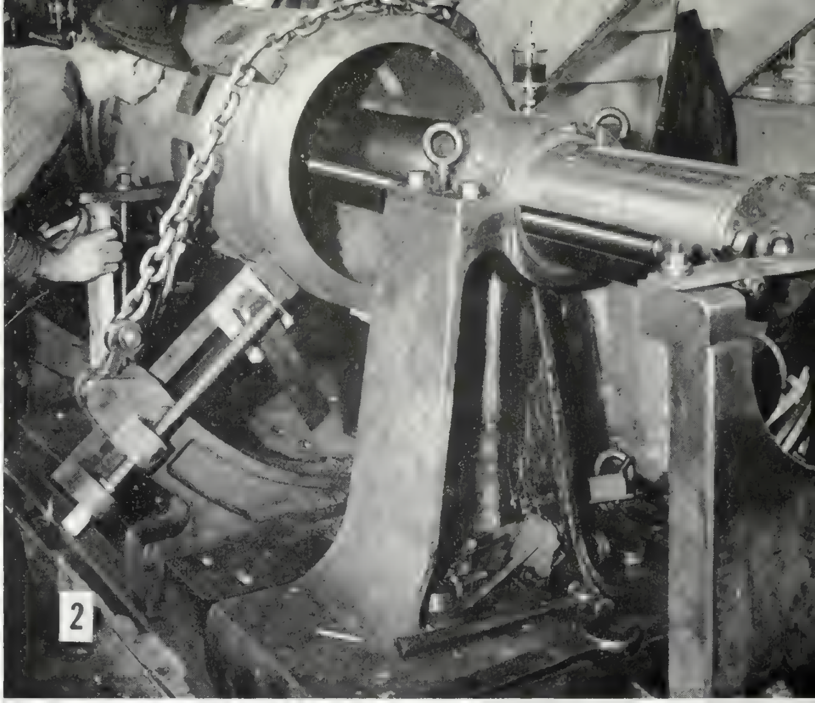
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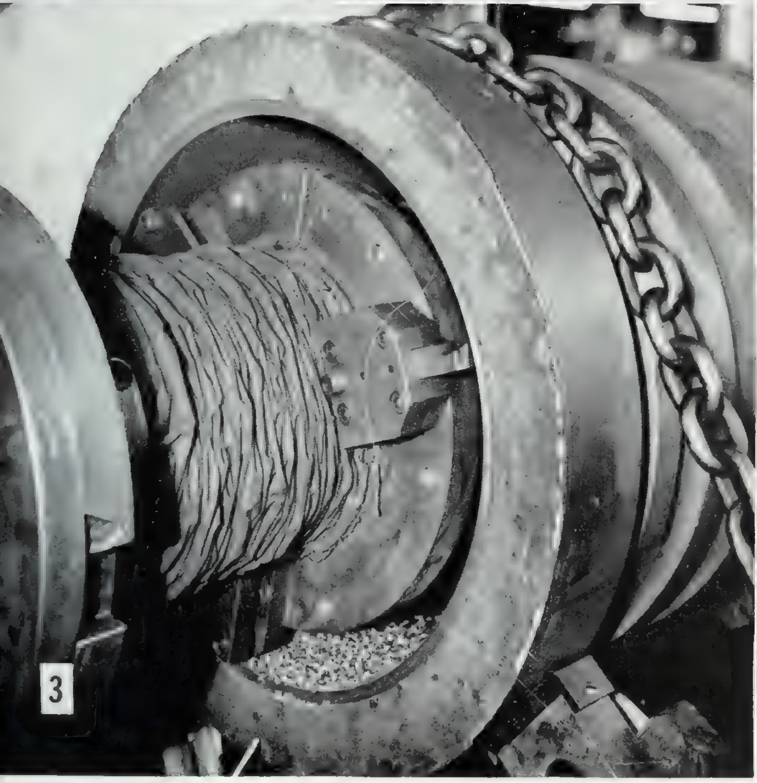
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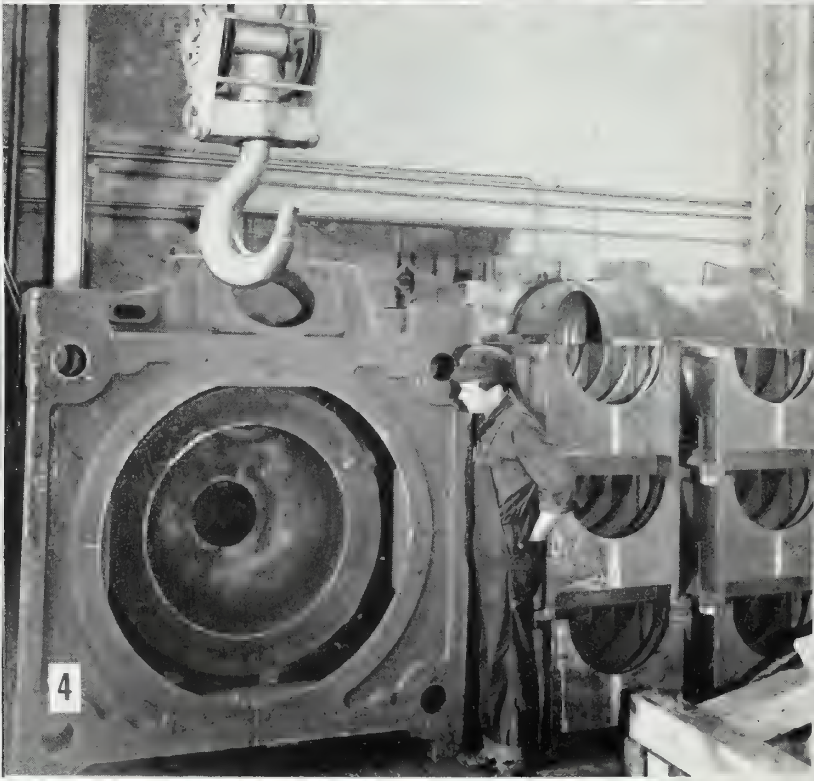
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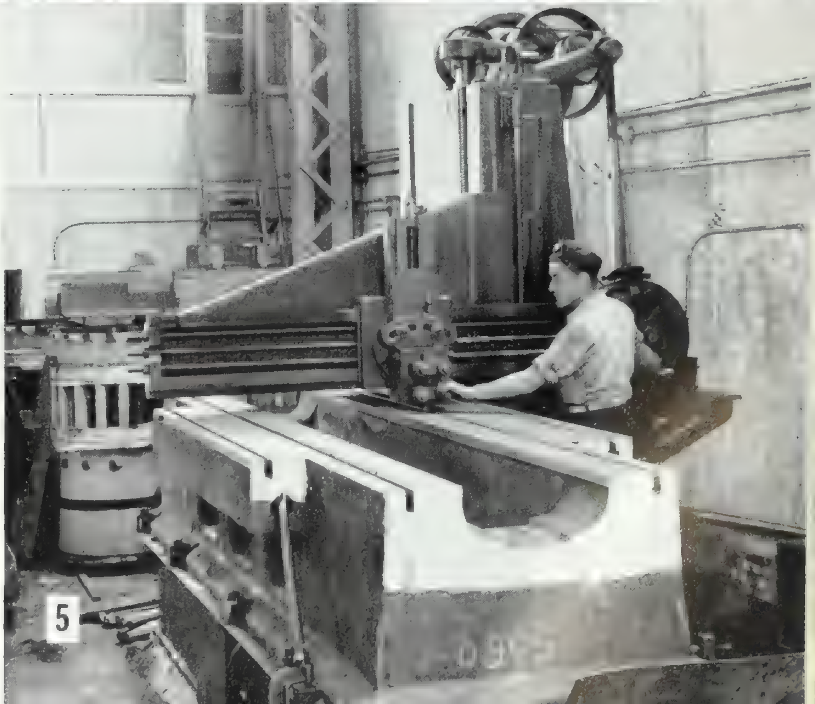
(1) **GENERAL VIEW** of horizontal boring machine built for marine engine work.

(2) **SHOWING BORING BAR** and star feed arrangement.

(3) **CLOSE-UP** of boring head, showing Carboloy tools and protecting sleeve for boring bar.

(4) **TEN-TON CASTING** to be machined for lower main engine cylinder head.

(5) **PLANING A BED** for a special crank shaft lathe.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Keep Posted!

NEW EQUIPMENT AND MACHINERY *for . . .* YARD SHIP and DOCK

Joshua Hendy Buys Crocker Wheeler

Joshua Hendy Iron Works, Sunnyvale, California, announces purchase of the Crocker-Wheeler Electrical Manufacturing Company with its large manufacturing plant in Ampere, New Jersey, and district offices in the principal cities of the United States.

The Hendy management has concluded arrangements with the directors of the Crocker-Wheeler Company, and the sale will become final if ratified by the Crocker-Wheeler shareholders at a meeting called for December 10.

In addition to articles of war manufactured by Crocker-Wheeler Company, their standard products include polyphase induction motors, synchronous motors, direct current motors, alternating current generators, direct current generators and motor generator sets.

Charles E. Moore, president of Joshua Hendy Iron Works, states that the proposed purchase would not change Crocker-Wheeler's production of electric motors and other products, and that the management and employees of the New Jersey concern's plants would remain intact. Executive control, however, would be centered at Joshua Hendy's general offices in Sunnyvale.

Plans for the combined operation include expansion of both Crocker-Wheeler and Joshua Hendy properties in New Jersey and California, as well as the manufacture of electrical apparatus at the Hendy plant in Sunnyvale.

Thomas C. Wilson, Inc. Moves to New Quarters

Mr. O. J. Bagnoli, vice president and general manager of Thomas C. Wilson, Inc., manufacturer of tube cleaners and tube cleaning accessories, announces the removal of the company's offices and plant to 21-11 44th Avenue, Long Island City, N. Y., where it has purchased the modern three-story, reinforced concrete, fireproof building.

The new building makes immediately available to the company nearly four times the floor space it had in the building it formerly occupied, and is so designed and constructed that two additional stories can be added, without interfering with manufacturing operations, should the need for increased manufacturing facilities arise in the future. The greatly increased production capacity which the new building gives the company will materially reduce manufacturing schedules and will also speed up shipments.

The company was recently awarded a contract for supplying 681 more vessels of the "Victory Fleet" now building for the United States Maritime Commission with all tube cleaning equipment. This makes a total of 993 Liberty ships to be equipped with the company's products. Its equipment is also extensively used by the United States Navy.

Communication System With Interceptor Control

A new combination of Executone's standard features is incorporated in the improved Executive-Monitor communication system consisting of two or more master stations connecting up to 19 remote stations in the system. An ideal arrangement for war production plants, military and naval departments, where officers must talk to each other, to an executive assistant, and also to a member of remote departments.

The executive and monitor stations can talk to each other, or either can carry on two-way voice-amplified conversations with remote desk or trumpet-type substations in outlying departments. The interceptor-control feature enables the assistant at the monitor station to intercept all incoming calls originating at the remote stations.

The assistant receives and sifts these calls, and at his discretion can transfer to the chief executive those important calls requiring attention.

Any number of additional executive and remote stations can be added to this system until the total capacity of 21 stations is reached.

Both executive and monitor stations are equipped with busy signals which illuminate to show when other stations are in use. The executive station, however, has the optional facility of right-of-way over busy stations for emergency use. A paging button enables the user of any master station to call all other stations simultaneously, for paging and locating persons instantly, and for issuing emergency warnings or general announcements to the entire staff.

Persons called can reply remotely without leaving their work to approach the station. High-powered, trumpet-type substations provide extra sound volume to cover large space areas or penetrate high-noise levels. Push-button selection facilitates speed of operation. All wiring lines are connected to inconspicuous junction boxes for neat and simplified installation. Electric connection is to 110-120 volts ac or dc current. Power consumption for the entire system is only 46 watts.

Manufactured by Executone, Inc., 415 Lexington Avenue, New York, this system is UL approved and licensed under A. T. & T. patents, and is serviced and installed by the manufacturer's representatives in principal cities.

EXECUTONE'S Executive-Monitor communication system.

A Marine Electric Service

On November 18, Lights, Incorporated was awarded the coveted Army and Navy "E" for excellence in production. The output of this concern, while it was prodigous, has been done in a small plant employing less than 200 persons. The means employed to turn out between $5,000,000 and $10,000,000 worth of prime contracts to both the Army and the Navy has been the extensive use of subcontracting facilities.

The practice of subcontracting has been employed for the past seven years, with the result that when the time came for concentrated effort in war production, the company was ready. The successful coordination of the efforts of between 400 and 500 small machine shops scattered throughout the Los Angeles metropolitan area and in many suburban towns, requires skill in management and coordinating efforts.

While it is true that a very large percentage of the business handled by the company has been in lighting equipment, it is nonetheless true that a very considerable volume of business has been done on contracts involving restricted secret items for not only the Army and Navy and its allied air corps branches, but for the Ordnance Department of both the Army and Navy.

Because of the knowledge of the productive capabilities of their many subcontractors and because of the extremely capable engineering force employed by the company, it is possible for them to handle successfully a wide variety of badly needed products. For this reason, the Marine Department has extended its services to include requirements of not only the Navy and the Coast Guard, but the merchant marine. One of the outstanding developments of this department has been a terminal tube so constructed as to obviate any welding operations in conjunction with its installation. In addition to terminal tubes, this department is set up to manufacture such fittings as stuffing tubes, junction boxes, distribution boxes, and all steel enclosures.

Ever mindful of the increased critical shortages existing in certain strategic materials, this company is now in production on door switches, electrical steel enclosures in accordance with 9S drawings. The illustrated door switch is available in all five types.

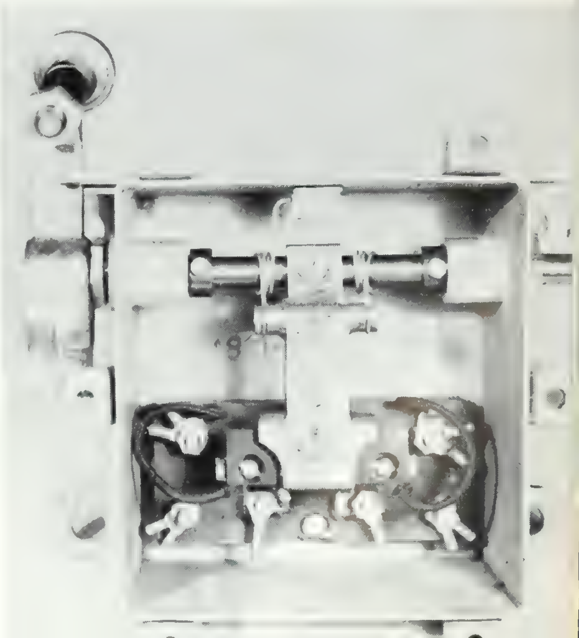
It is the earnest desire of the Marine Department of Lights, Incorporated to extend its services for the shipbuilding industry to eliminate, insofar as possible, any existing bottlenecks which can be successfully handled by its subcontracting facilities.

Complete data covering a list of all marine fittings, electrical and otherwise, can be had by addressing such a request to the Marine Department, Lights, Incorporated, 1111 South Fremont Avenue, Alhambra, California.

Method of Ground Cork Application

The procedure of applying ground cork in shipbuilding has been radically changed by the introduction of Dolfinite 3765 Ground Cork Anti-Sweat Compound, a product of the Dolphin Paint and Varnish Company, Toledo, Ohio.

LIGHTS INCORPORATED DOOR SWITCH



ABOVE: Some 3000 Combustion workers and their families at the Navy "E" ceremonies.

LEFT: UP SHE GOES! Representatives of Combustion workers raise the "E" Pennant.

ARMY-NAVY "E" AWARD TO COMBUSTION ENGINEERING

On Navy Day, October 27, the Army-Navy "E" Award was presented to the Hedges-Walsh-Weidner Division of Combustion Engineering Company, Inc. The presentation was made in a colorful out-of-door ceremony at the plant in Chattanooga, Tenn., attended by some 3000 employees and their families.

Lt. Colonel J. C. Shouvlin of the Cincinnati Ordnance District made the presentation address, in the course of which he said, "Fortunately, this company happens to be one that started producing for war over three years ago. The production we have gotten out of your company has been worth its weight in gold."

The acceptance address was delivered by **A. J. Moses,** vice president and general manager of the company's Chattanooga plant. In expressing the spirit in which the award was accepted, Mr. Moses said, "There is only one issue for Americans today. We shall let no personal or group consideration deter us from doing out best to back up our fighting forces—not some of the time or most of the time but ALL of the time until complete and final victory is ours."

Presentation of the "E" pins to five selected employees was made by **Lieutenant Commander J. H. Gibbons, U. S. N. R.**

The largest of the company's four manufacturing units, the Hedges-Walsh-Weidner Division is operating 24 hours a day, 7 days a week, supplying boilers and related equipment for practically all types of war production plants. Included in this category of work are boiler units and special pressure vessels for most of the larger powder plants. The company is also supplying complete boiler units for naval and cargo ships, its contracts covering nearly 40 per cent of the entire shipbuilding program of the U. S. Maritime Commission. It is a recent recipient of the Maritime Commission's "M" Award.

Instead of throwing the cork against the surface after it has been treated with some adhesive, or applying it with the spray method, whereby great waste is encountered as considerable quantities fall to the floor and cannot be reclaimed, Dolfinite Compound is trowelled right onto the surface quickly and without waste. The ground cork and adhesive are integral parts of the Dolphin product.

A long list of other Dolphin marine products also have been called to service by shipbuilders because of their dependability and time-saving qualities. Widely used in the building programs of the Army, Navy, Coast Guard and Maritime Commission, there are an original adhesive for corkboard and Fiberglas insulation, calking compounds, bedding compounds, Fiberglas fireproof sealer size, electrical sealer compound, corkboard surfacer, Fiberglas duct insulation joint sealing compound, and Fiberglas tape cement.

Cork Insulation Co. Inc., New York City, are exclusive national distributors for the Dolfinite line. Branches are maintained in Chicago, Philadelphia, Los Angeles, Washington, Seattle, San Francisco, St. Louis, and Boston.

Moisture Preventers For Oil Tanks

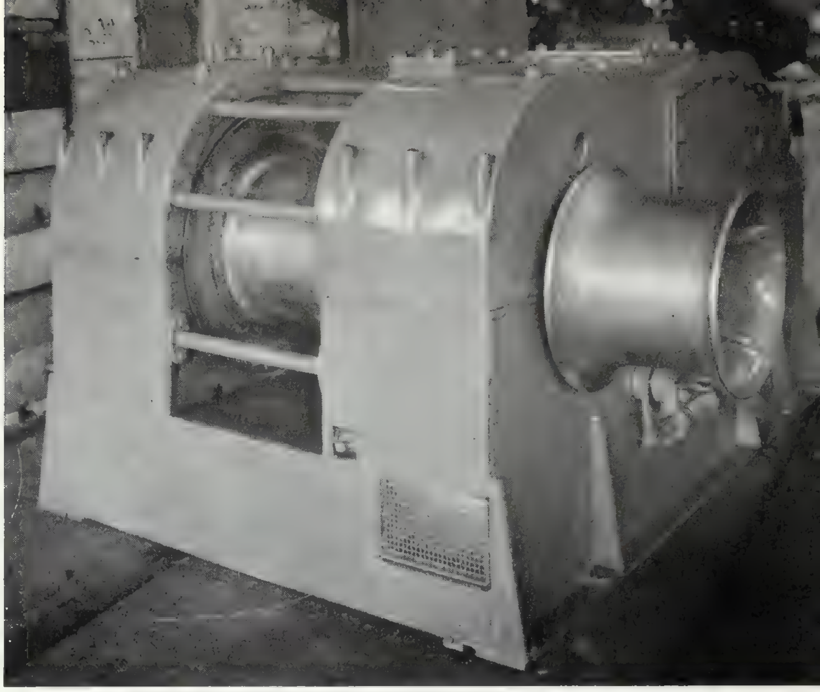
Lectrobreathers, developed by Pittsburgh Lectrodryer Corporation, Pittsburgh, Pa., are used to prevent the entrance of atmospheric moisture into oil and chemical tanks.

Lectrobreathers permit only dry air to enter the tank when it is emptied or when air enters due to temperature drops. Air leaving the tank, being thoroughly dry, has a partial reactivating effect which makes possible long periods between reactivations. They are mounted either directly on the tank or piped to it and are equipped with color indicators for determining when reactivation is needed or when it is complete. Where Lectrobreathers are required for several tanks, the standard practice is to use one on each tank and a central reactivator for all breathers. The reactivators are built for electric operation as standard for all units or for steam operation on the two larger units. Special Lectrobreathers are available for use on transformers or other equipment where atmospheric moisture is harmful.

Lectrobreathers use Activated Aluminas, which are dependable, time-tested absorbents. They operate on the same principle as Lectrodryer equipment which is successfully used in many industries for drying compressed air, gases and for maintaining lower than normal relative humidities in rooms. Complete information will be furnished on request.

(More Keep Posted on Page 110)

SOMETHING NEW IN AN ELECTRIC CARGO WINCH



THE NEW UNIWINCH

The greatly accelerated shipbuilding program has resulted in the development of many new types of marine equipment. The Uniwinch, developed by the Lake Shore Engineering Company, of Iron Mountain, Michigan, is an excellent example. This winch has many advantages over the conventional open type which has been used for cargo handling work for many years without any basic change in design.

Designed for standard cargo handling purposes with a single drum and winchhead, the winch has also been adapted for two and three drums for special rigging arrangements on auxiliary war vessels. All designs are available in either single-speed or two-speed types, with the necessary gearing and clutches for speed change and disconnection of drums on the multiple drum types.

Uniwinch has the following performance and rated capacity:

Hook

Load	Speed
1½ Tons	290 F.P.M.
3 Tons	220 F.P.M.

At Drum

Rope Load	Rope Speed
3720#	290 F.P.M.
7450#	220 F.P.M.

It has the following overall dimensions:

Width Base Proper	4′11″
Width Base Over Supporting Lugs	5′5″
Length Base	7′5″
Height—Center Line of Drum to Base	2′6″
Width Overall at Gypsy Head	6′8″
Overall Height	4′3″

The Uniwinch consists of the ordinary wire rope drum and winchhead, double reduction geared to a driving motor, but departs from conventional practice in that the motor, control panel, and resistor are all mounted self-contained within the winch housing which is a watertight steel enclosure. Forced ventilation is used, thus improving the operation of the the equipment under high ambient temperature conditions and permitting the use of lighter and smaller resistors.

This construction leads to many advantages, among which are:

(1) Space is saved on the ship's deck because no control houses are required, as the entire electrical equipment, with the exception of the master switch, is mounted within the individual winch.

(2) The elimination of control houses results in an overall saving in weight and space, resulting in greater cargo carrying capacity of the ship.

(3) Installation on the ship is much simpler, as all of the wiring and connections between the control panel and resistor are within the winch itself and are made in the factory when the winch is built.

(4) There is a decided overall saving in the critical materials of steel for the controller house and copper wiring in the control house.

(5) The control equipment is distributed in each winch, and not concentrated for a group of winches in a single control house, so that there is much less likelihood of disabling a large number of winches by a single hit from shell fire.

The Uniwinch is built to the approval of the United States Maritime Commission, upon whose cargo and special purpose vessels it is now being installed.

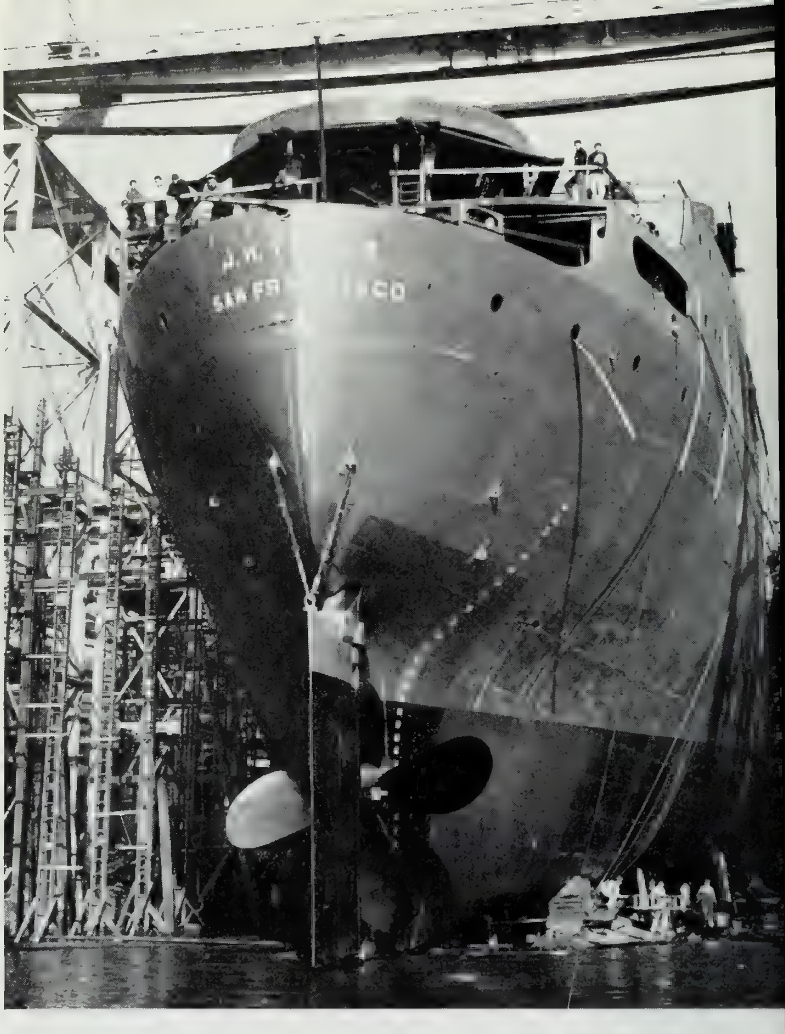
NAVAL ARCHITECTS AND MARINE ENGINEERS

(Continued from page 63)

progress can be confidently anticipated. Riveted construction for most classes of merchant ships appears to be definitely on the way out so far as our United States shipyards are concerned. Welding is already universal practice in the smaller type vessels, say under 300 feet long, and is being rapidly extended to include the larger ocean-going vessels, a large percentage of such vessels building today being all-welded. In normal times, when it is a question of the survival of the fittest under stress of competition, the all-welded ship should be able to hold her own, except perhaps in the case of the very large ship where it may be cheaper to continue to rivet rather than weld the heavy plating of shell and strength decks and where there is a practical economic limit to the size and weight of subassemblies, which cannot be increased indefinitely. Whatever the future may have in store for ship welding, there is no doubt but that the use of welding in ship construction has tremendously accelerated the war effort and has contributed enormously to that wonderful record of ship production."

J. H. Tuttle

NEW STANDARD OF CALIFORNIA TANKER LAUNCHED AT SUN YARD



LARGEST TANKER ever built for Standard of California—the S.S. J. H. Tuttle—just prior to its recent launching at the Sun Yard, Chester, Pa.

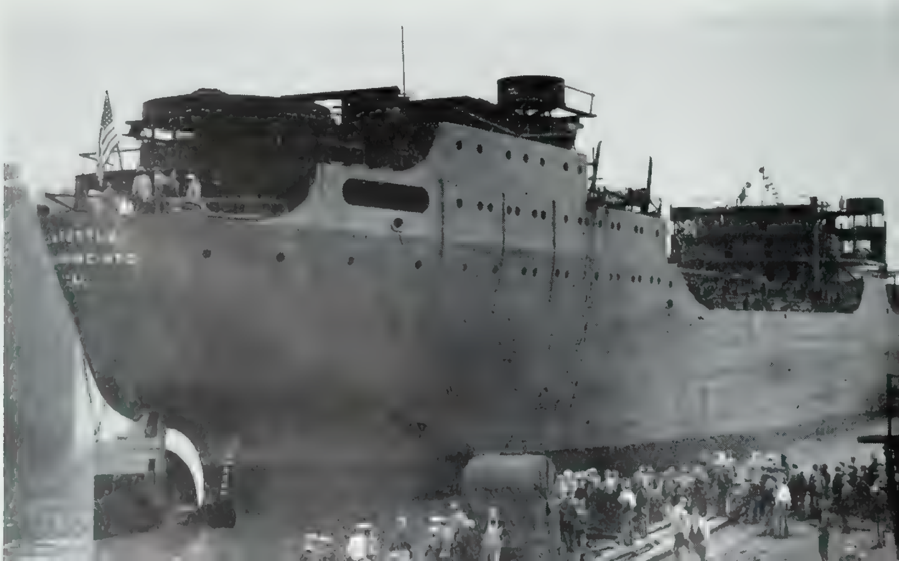
LAUNCHED recently and due to enter service in February is the giant tanker J. H. Tuttle, now outfitting in the Sun Shipbuilding and Dry Dock Company's yard at Chester, Pa. This vessel is the largest tanker yet built for the Standard Oil Company of California and will be one of the largest tankers claiming San Francisco as home port.

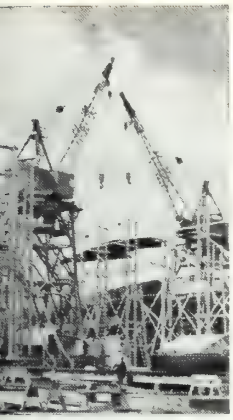
Named after the vice president and treasurer of the great California oil firm, she was christened by Mrs. J. H. Tuttle.

As shown by our illustrations, the hull has beautifully molded lines and is of huge bulk. Details have not been publicized by the owners, but undoubtedly she: will have a good turn of speed; will be equipped with the most up-to-date, most comfortable, most sanitary and best ventilated living quarters for officers and crew; will have the latest and most economical geared turbine propulsion machinery; and the most effective cargo pumping system.

LEFT: J. H. TUTTLE, vice president and treasurer on Standard of California's board of directors, whose name—long identified with the Nation's petoleum industry—is borne by the newest company tanker; and Mrs. Tuttle, who christened the S.S. J. H. Tuttle at its recent launching.

BELOW: J. H. Tuttle now being prepared for active service in February.





On the Ways—
SHIPS IN THE MAKING

PACIFIC YARDS AGAIN LEAD SHIPBUILDING PARADE

American shipyards, engaged in building merchant ships for the Victory Fleet, delivered into service 81 vessels totaling 890,700 tons deadweight in October, the Maritime Commission announced. The October figure brings total ship production for the year to approximately 6,000,000 deadweight tons.

The month's deliveries were 12 vessels short of the record-breaking production of 93 merchant ships in September. This was due, the Commission stated, to the temporary diversion of a considerable amount of the merchant shipbuilding capacity to emergency construction of special craft for the armed forces.

Of the 81 vessels delivered in October, 65 were Liberty ships, three cargo carriers for British account, eight C-type, four large tankers and one ore carrier. West Coast yards lead the construction parade by putting into service 43 vessels. East Coast yards delivered 24 ships, Gulf Coast yards 13 vessels, and one ship was completed on the Great Lakes.

Two West Coast yards, California Shipbuilding Corporation, Wilmington, California, and the Oregon Shipbuilding Corporation, Portland, Oregon, were tied for individual honors, each delivering 12 ships. Richmond Shipyard No. 2 of the Permanente Metals Corporation, Richmond, California, took third place by delivering 10 vessels, while the Corporation's Richmond Shipyard No. 1 delivered 7 ships. The month also saw the first Liberty ship to be delivered by the W. A. Bechtel yard at Sausalito, California.

OCTOBER LIST OF DELIVERIES

SHIPYARD	NO. OF SHIPS	TYPE OF SHIP
American Ship Building Co. Cleveland, Ohio	1	Ore Carrier
Alabama DD & SB Company Mobile, Alabama	2	Liberty
Bethlehem-Fairfield Shipyard, Inc. Baltimore, Maryland	4	Liberty
California Shipbuilding Corp. Wilmington, California	12	Liberty
Delta Shipbuilding Company, Inc. New Orleans, Louisiana	4	Liberty
Federal Shipbuilding & Dry Dock Co. Kearny, New Jersey	2	C-2 cargo
Gulf Shipbuilding Corporation Mobile, Alabama	1	C-2 cargo
Houston Shipbuilding Corporation Houston, Texas	4	Liberty
Ingalls Shipbuilding Corporation Pascagoula, Mississippi	1	C-3 cargo
North Carolina Shipbuilding Co. Wilmington, North Carolina	6	Liberty
Oregon Shipbuilding Corporation Portland, Oregon	12	Liberty
Pennsylvania Shipyards, Inc. Beaumont, Texas	1	C-1 cargo
Pusey & Jones Corporation Wilmington, Delaware	1	C-1 cargo
Permanente Metals Corp. (Richmond Shipyard #1) Richmond, California	7	Liberty
Permanente Metals Corp. (Richmond Shipyard #2) Richmond, California	10	Liberty
Seattle-Tacoma Shipbuilding Corp. Tacoma, Washington	1	C-3 cargo
South Portland Shipbuilding Corp. South Portland, Maine	3	Liberty
Sun Shipbuilding & Dry Dock Co. Chester, Pennsylvania	1 4	C-2 cargo Tankers
Todd-Bath Iron Shipbuilding Corp. South Portland, Maine	3	British
W. A. Bechtel Company Sausalito, California	1	Liberty

George Westinghouse Launched at Richmond

Richmond Shipyard Number Two christened a Liberty ship after George Westinghouse, in honor of the founder of the Westinghouse Company, on October 20. W. P. L'Hommedieu of Westinghouse was the principal speaker, and Eleanor A. Haas, of the Pacific Coast department of the company, sponsored the vessel.

Progress on U.S.S. Lafayette Formerly Normandy

Although Navy officials declined to speculate on the date of raising the U.S.S. Lafayette, the former French luxury liner Normandy, much preliminary progress has been attained.

Most of the debris alongside of her has been cleared away and all fire hazards removed. Three-quarters of her superstructure has been cut away and one-fourth of the mud, which rose 20 feet inside the hull, has been pumped out.

Pacific Coast Delivers 48 Ships in November

Of the 84 ships delivered to the Maritime Commission in November, 48 were constructed in Pacific Coast shipyards, it was disclosed December 3.

Deliveries by western yards were: California Shipbuilding Corporation, Wilmington, 13 EC-2s; Marinship Company, Sausalito, one EC-2; Moore Dry Dock Company, Oakland, one C-2 cargo ship; Oregon Shipbuilding Corporation, 13 EC-2s; Richmond Shipyard No. 1, eight EC-2s; Richmond shipyard No. 2, 10 EC-2s; Seattle-Tacoma Shipbuilding Corporation, Tacoma, one C-3 cargo ship; and Western Pipe & Steel Co. of California, San Francisco, one C-3 cargo ship.

Two Yards Launch Their 100th Liberty

In November two Pacific Coast yards launched their 100th Liberty vessel amid much celebration. Oregonship's George W. Goethals was launched as their 100th ship on November 23. Calship reached the hundred mark on November 27 with the launching of Benjamin Ide Wheeler, sponsored by Mrs. Robert Gordon Sproul, wife of the president of the University of California. Both yards expect to deliver their 100th ship during this month.

U. S. S. PROTEUS, submarine tender, launched at Moore Dry Dock Company on November 12.

Marinship Lays Tanker Keel; Launches Liberties

S.S. Philip Kearny, sixth Liberty to be launched at Marinship, went down the ways on December 7, christened by Mrs. Earl Warren, wife of the Governor-elect of California, and was immediately followed by the laying of the keel for the yard's first tanker. As soon as the present Liberty contract is completed, the yard will build tankers exclusively.

Other Liberties launched prior to this date are: William Kent, November 11, sponsored by twin daughters of Mr. and Mrs. Thomas Kent, Marty and Nancy; John Muir, November 22, sponsored by Mrs. Isobel Holland Stack, stenographer in Marinship's expediting department; Lyman Beecher, November 26, sponsored by Mrs. E. C. Panton, wife of the yard's manager of construction.

Dry Docks For Navy

At a total estimated cost of $5,554,755, the Bureau of Yards and Docks, Navy Department, Washington, D. C., has awarded a contract for the construction of shipbuilding dry docks and accessories at the **Philadelphia Navy Yard,** to Spencer, White & Prentis, Foley Bros., and Merritt-Chapman & Scott Corporation, N. Y.

U. S. Army Vessels

The **Minneford Yacht Yard, Inc.,** City Island, N. Y., has a new contract for the construction of three wooden 140-foot diesel-propelled freight and passenger vessels for the United States Army.

Contract For Berg

Plane rearming boats are the specialty of the **Berg Boat Company, Inc.,** Georgetown, Md. This company has been awarded the Army-Navy "E" on past performance and has recently been given a contract for 20 additional boats. This makes a total of 30 including the ten boats awarded in August.

Three-Day Ship At Pacific Bridge

Employees of the Pacific Bridge Company, Yard No. 1, in Alameda, established a real record in ship construction on November 13.

With 480 ship fitters, welders, burners, flangers, riggers and all types of shipyard workers turning in a record performance, the Samuel Very, a cargo vessel built for the Maritime Commission, was launched into the waters of the Oakland Estuary just three days and eight hours—80 hours in all—after the keel was laid.

Construction on the ship was started 12:01 A.M. on Tuesday, November 10, and the vessel was launched at 8:00 A.M., November 13.

Mrs. Phyllis Swigert Real, daughter of W. G. Swigert, president of the Pacific Bridge Company, christened the ship. Her attendant was Miss Calla Eaton, a Pacific Bridge Company employee.

Bethlehem Launches

November 20, the U.S.S. Hazelwood, second vessel of the Navy to bear the name, was launched at the Bethlehem, San Francisco, yard. It was sponsored by Mrs. Harold E. Fosdick, San Jose, the widow of the late Lieutenant Harold E. Fosdick, USN, and the mother of two sons now in naval service.

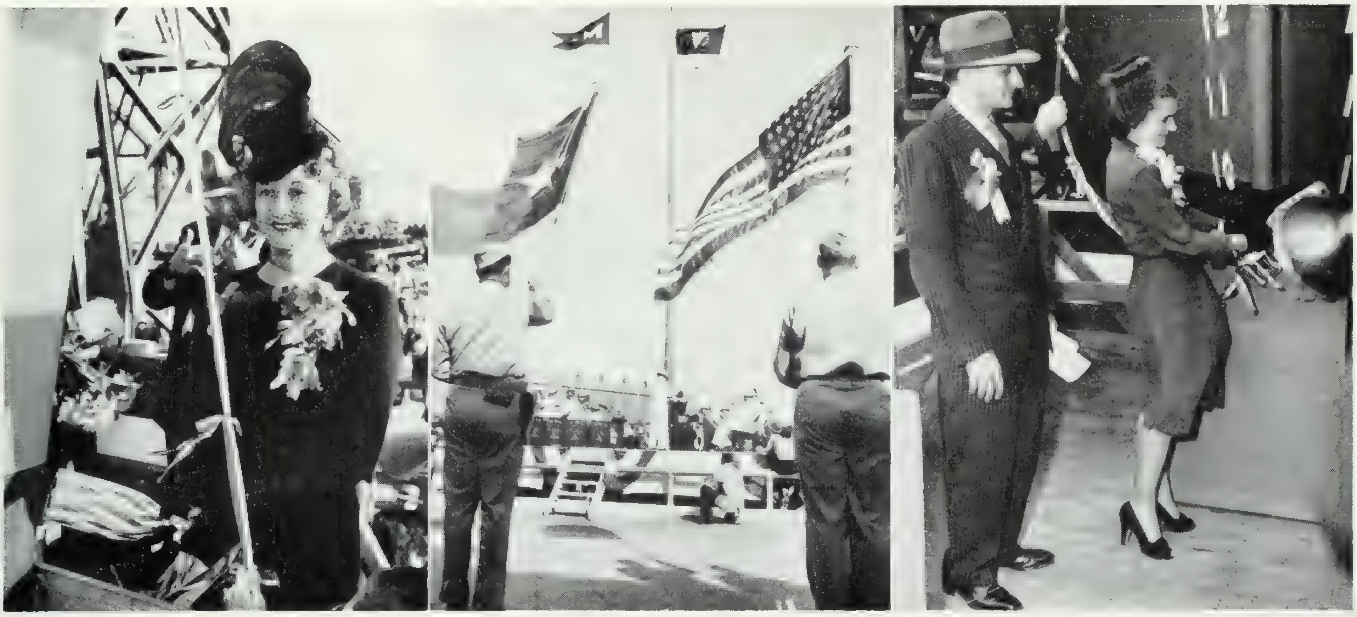
The name is derived from Commodore John Hazelwood of the Continental Navy.

Shift of Tug Contracts

The Maritime Commission announced award of additional contracts for the construction of six seagoing wooden tugs to the **Astoria Shipyards, Inc.,** Santa Barbara, California, and the **Standard Shipbuilding Corporation,** Long Beach, California.

Astoria Shipyards, which was given a contract in September for the construction of three tugs, will

TODD'S HOUSTON YARD CELEBRATES DOUBLE AWARD WITH DOUBLE LAUNCHINGS



MARITIME COMMISSION "M" PENNANT AND PRODUCTION FLAG are raised (center) at Houston Shipbuilding Corporation, Houston, Texas, a Todd subsidiary, while the Texas Lone Star flag flies with "Old Glory." During the ceremonies, the yard launched its 27th and 28th Liberty ships. Mrs. J. Herbert Todd (left), wife of the vice president of the Todd Shipyards Corporation, sponsored the S.S. Lambert Cadwalader. Mrs. Elliott Roosevelt (right), sponsored the S.S. Joseph E. Johnston. John Galiano, chief hull clerk, watches Mrs. Roosevelt getting ready to swing.

build four additional vessels. Standard Shipbuilding Corporation, previously awarded a contract for the construction of six tugs, will build two more.

Astoria Shipyards has agreed to construct four vessels on an adjusted price basis of $418,370 each. Standard Shipbuilding Corporation will construct its two additional vessels on a fixed price basis, at $384,845.34 each.

Award of the additional contracts, the Commission said, resulted from the failure of the Pensacola Shipyards and Engineering Company of Pensacola, Florida, to fulfil its obligations for the construction of six tugs.

Two Launchings Celebrate Awards

The Houston Shipbuilding Corporation, Houston, Texas, subsidiary of the Todd Shipyards Corporation, was presented with the U.S.M.C. "M" Pennant and also the Maritime Award for Production on November 16.

Coincident with presentation of the awards was the launching by the yard of two more Liberty ships, the S.S. Joseph E. Johnston and the S.S. Lambert Cadwalader. They were the 27th and the 28th cargo vessels to slide into the waters of the Gulf since the yard was constructed less than two years ago on a barren strip of mud flats. A total of 69 Liberty ships are being built at the yard under the present Maritime Commission contract.

Mrs. Elliott Roosevelt, wife of Lt. Col. Elliott Roosevelt, the President's son, christened the Joseph E. Johnston. Assisting her as matron of honor was Mrs. Reed A. Albee. Sponsor of the Cadwalader was Mrs. J. Herbert Todd, wife of the vice president of the Todd Shipyards Corporation. Her matron of honor was Mrs. Henry W. Breyer, Jr.

J. Herbert Todd delivered an address congratulating the workers and management for their achievements, and Attorney General Gerald Mann spoke as representative of the State of Texas. Presentation of the "M" Pennant to the yard generally was made by John L. Baker of the Maritime Commission to Mr. Stout, general manager of the yard, and the production award was received by a committee of workmen. The two Maritime Commission pennants were then run up on the yard flagpole.

Speeches on behalf of the shipyard workers were delivered by John Galiano, chief hull clerk, who talked prior to the launching of the Johnston, and Paul G. Ferguson, shipfitter instructor, who spoke at the Cadwalader ceremonies.

Tug Bids To Be Opened

Bids for the construction of a number of wood tugs, to be used as propulsion units in connection with the Maritime Commission barge program, will be opened on December 8, the Commission announced.

The vessels, which will be of the V2-M-AL1 design, are to be 65 feet in length and bids for their construction will be considered for from one to six vessels to a single contractor.

Bids will not be considered that fix the number of calendar days (counting Sundays and holidays) for the delivery of the first tug at more than 135 days and the time for the delivery of the last tug at more than 225 days. Bids must be submitted on a fixed-lump-sum basis, but each bidder may also bid on an adjusted price basis.

Georgia Launches First Liberty

The first Liberty ship to be launched in Georgia, the James Oglethorpe, slid down the ways of the Southeastern Shipbuilding Corporation, at Savannah, on Friday, November 20.

The new 10,500-ton vessel was sponsored by Mrs. Walter F. George, wife of the United States Senator from Georgia. The principal speaker at the launching ceremony was Rear Admiral Howard L. Vickery, vice chairman of the Maritime Commission.

The contract for the construction of the James Oglethorpe and 31 other Liberty ships was let to the yard by the Maritime Commission last February. The ship, named after the founder of Georgia, is expected to be delivered into service by the end of the year.

Bayonne Yard Launches 2 Tankers

Governor Charles E. Edison, of New Jersey; Mayor James Donovan, of Bayonne, New Jersey; and high Government officials participated with officials of the U. S. Maritime Commission and the Marine Maintenance Corporation, Bayonne, N. J., Saturday, Nov. 28, in ceremonies at 12 noon, marking the first launching of two oil tankers on the East Coast since the war. More than 5,000 workers, guests and Civic dignitaries were at this gala fete.

The two tankers were named in honor of Indian battlefields. The first, named the S.S. Clearwater, was christened by Mrs. Charles E. Edison, wife of the Governor. The second, the S.S. Tongue River, was christened by Princess Delvina, a full-blooded Onondaga Indian, who journeyed to Bayonne, from the Onondaga Reservation, upstate, accompanied by a delegation of stalwart braves.

From the time contracts were let, May 19, 1942, to the day of launching, Nov. 28, 1942, only six months elapsed. During this short time, Gregory Ferend, President of the company, started work and practically completed a modern shipyard. From the actual time keels were first laid, on August 13, 1942, until the date of launching, November 28, 107 days have elapsed. In that remarkably short time, not one—but four ships have been building, two launched, and two more, to follow soon.

Alabama's 16th Liberty

Alabama Dry Dock & Shipbuilding Co. launched the S.S. Benjamin H. Latrobe, 10,500-ton cargo vessel at Mobile, Tuesday, November 17. It was the 16th Liberty ship built by ADDSCO's Pinto Island yard for the U. S. Maritime Commission.

Calship Leads "Liberty" Deliveries

California Shipbuilding Corporation, national champion builder of 10,500-ton Liberty ships for four months, again led the nation in November.

For the third consecutive month, Calship broke its own pace-setting record by launching 13 cargo carriers, delivering 13 and laying keels for 13 more. In October the yard launched 13, delivered 12 and laid 13 keels.

Last minute reports indicated that for the first time in many months another West Coast yard may tie Calship's production record for the month. It is the Kaiser yard at Portland, which in October launched one less ship than Calship. The yard is under Bechtel-McCone-Parsons Corp. sponsorship.

Barge Awards

Contracts for the construction of 330 knocked-down wooden barges were awarded to seven firms located on the East, West and Gulf coast regions and the Great Lakes, the Maritime Commission announced.

Bids for the barges were opened by the Commission on October 20, at which time 106 firms in all parts of the country submitted offers. The vessels are to be 78 feet in length, and each contractor submitted his bid on a fixed-price, lump-sum basis.

Contracts awarded by the Commission are as follows: Fifty each to **W. C. Salley**, Monroe, Louisiana; **Tuggle Sash and Door Co.**, Brownsville, Texas; **Scott Graff Co. Industrial Construction Corp.**, Duluth, Minnesota; **Brownsville Shipbuilding Corp.**, Brownsville, Texas; **Barr Lumber Company**, Santa Ana, California; **Pacific Woodenware Co.**, Marysville, Washington; and thirty to **Palatka Shipbuilding Corp.**, Palatka, Florida.

Navy "E" To Mare Island

For 18 consecutive months, the Naval Ammunition Depot at the Mare Island Navy Yard has been giving everything it had to the war effort—and a little more.

And because the Navy's system of awards is keyed to the measure of this additional drive, the Ammunition Depot became the first Northern California activity to fly the Navy "E" flag with two stars, symbolizing three consecutive "E" Awards.

The coveted award, which is made for periods of six months' operations, was originally won by the Depot in October, 1941. At the conclusion of the following six months, a single white star was affixed to the "E" pennant.

Recently, the addition of another white star, denoting the third "E" Award, was announced officially.

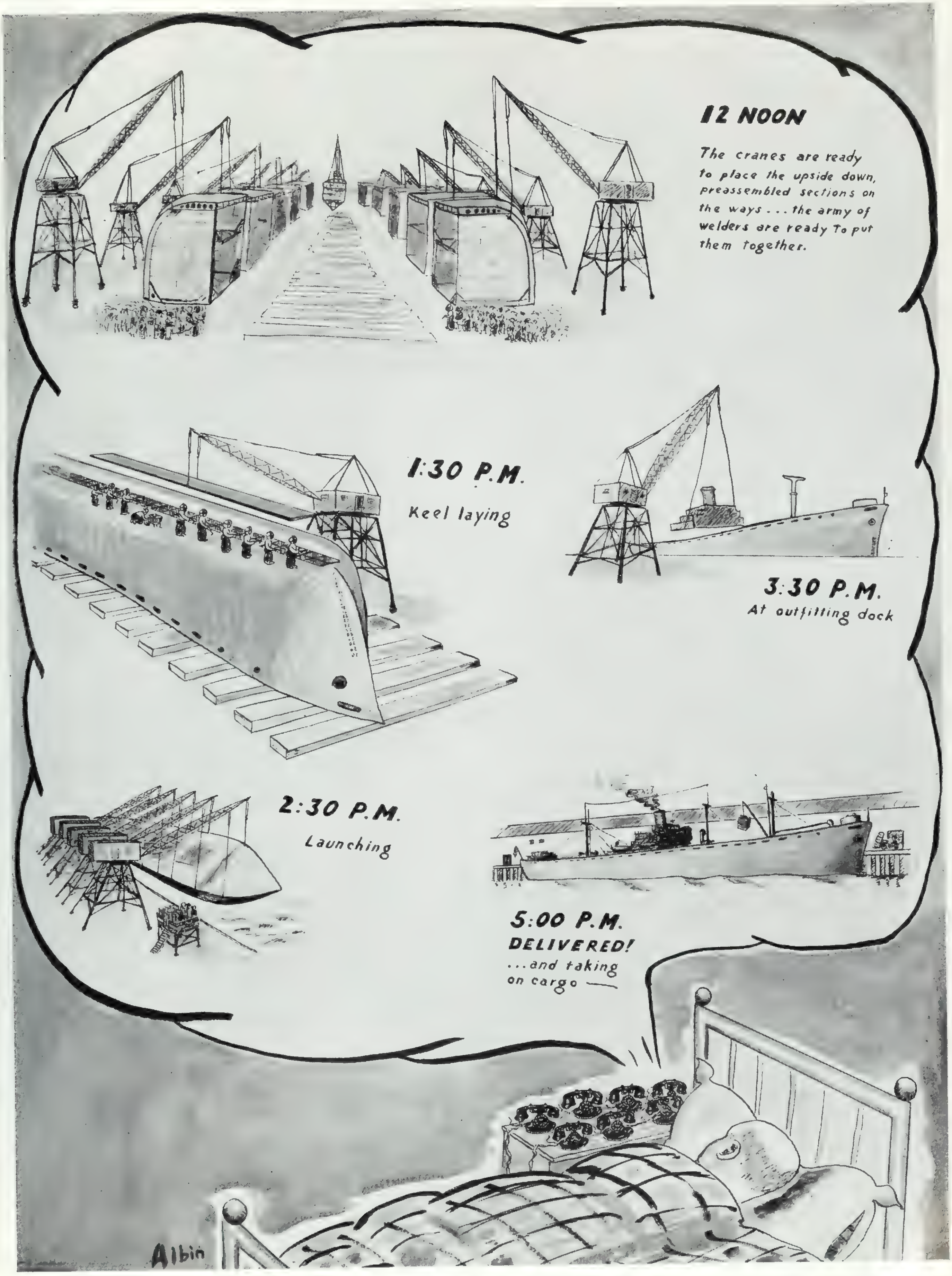
The Ammunition Depot is commanded by Captain Nelson H. Goss, USN (Ret).

Moore Launches Three

On November 11, there were two launchings of C-2 vessels at the Moore Dry Dock yards. The Messenger was sponsored by Mrs. "Tom" Rolph; the Titan by Mrs. Fisher, wife of the British Consul.

The next day, the Proteus, a submarine tender, was launched.

A LIBERTY SHIPBUILDER'S DREAM — *A SHIP EACH SHIFT*


12 NOON
The cranes are ready to place the upside down, preassembled sections on the ways . . . the army of welders are ready to put them together.
1:30 P.M.
Keel laying
3:30 P.M.
At outfitting dock
2:30 P.M.
Launching
5:00 P.M.
DELIVERED!
. . . and taking on cargo —
Albin

MARINE DEPARTMENT
AETNA INSURANCE CO.
QUEEN INSURANCE CO.
MARITIME INSURANCE CO., LTD.
FIDELITY PHENIX FIRE INS. CO.
Commercial Hull Dept.
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MATHEWS & LIVINGSTON
MARINE UNDERWRITERS
200 BUSH STREET . . . . . SAN FRANCISCO
Offices at: Colman Bldg., Seattle • 111 West 7th St., Los Angeles

WAR-DAMAGE INSURANCE

War-damage insurance to protect American citizens against financial ruin in the event of enemy attack has been made available at a reasonable cost by the War Damage Corporation, an agency of the United States Government. Ordinary business prudence would seem to demand that every citizen give careful consideration to this type of emergency protection in order to determine whether or not he can afford to gamble with his own financial solvency by being without it.

On December 13, 1941, following this country's declarations of war, the Federal Government, through the Reconstruction Finance Corporation, announced the establishment of a one hundred million dollar war-damage fund to meet the immediate demands for this kind of protection, which arose throughout the United States and possessions following Pearl Harbor. Subsequently, this fund was increased to one billion dollars, the sole purpose being to provide temporary war-damage protection for everyone, pending the time that a permanent system of war-damage insurance could be put into operation.

Fire insurance policies never have included protection against loss caused by invasion or military power and it was rather generally felt that it would be unsound for private insurance carriers to undertake to furnish protection against these wartime perils. The reserves of private insurance carriers have been built up over a great many years to guarantee the security of the protection these companies have sold. To expose these reserves to the catastrophic losses which might result from invasion or bombardment might make these insurance carriers unable to meet their obligations to their millions of policyholders throughout the nation, thereby undermining our entire credit structure at a time when a strong system of credit was most necessary. On the other hand, policyholders who were relying upon private insurance carriers for financial protection against war-damage losses might conceivably face financial ruin should losses prove too great for private insurance carriers to bear. These were several of the reasons prompting our Government to provide protection against these perils which present such great catastrophe possibilities.

Accordingly, there was created by an act of Congress the War Damage Corporation with a capital of one billion dollars and with authority to provide protection against direct physical loss of or damage to described property "which may result from enemy attack including any action taken by the military, naval or air forces of the United States in resisting enemy attack." The free insurance which had been furnished by the Government ceased at midnight of the last day of June, and the War Damage Corporation began operations on July 1, 1942.

The purchase of war-damage insurance is not compulsory. It is offered by the War Damage Corporation through the established facilities of the fire insurance business, which has cooperated closely with the Government in all of the details involved in planning for this venture. The fire insurance industry is performing these services as a contribution to the war effort, and there is no profit to anyone writing this form of insurance, it being intended that the allowances granted to those engaged in merchandising war-damage insurance will be sufficient only to cover out-of-pocket expenses. Thus war-damage insurance is not a profit-making venture. It is nothing more or less than a sound business proposition offered to owners of real and personal property at a reasonable cost.

It is believed that every property owner will wish to consider these new hazards with which he is faced as a result of present world-wide conflict, and whether or not he decides to purchase war-damage insurance, he at least should be familiar with the details of this plan which is designed for his protection. An inquiry of any established agent or broker will bring complete information without obligation of any kind.

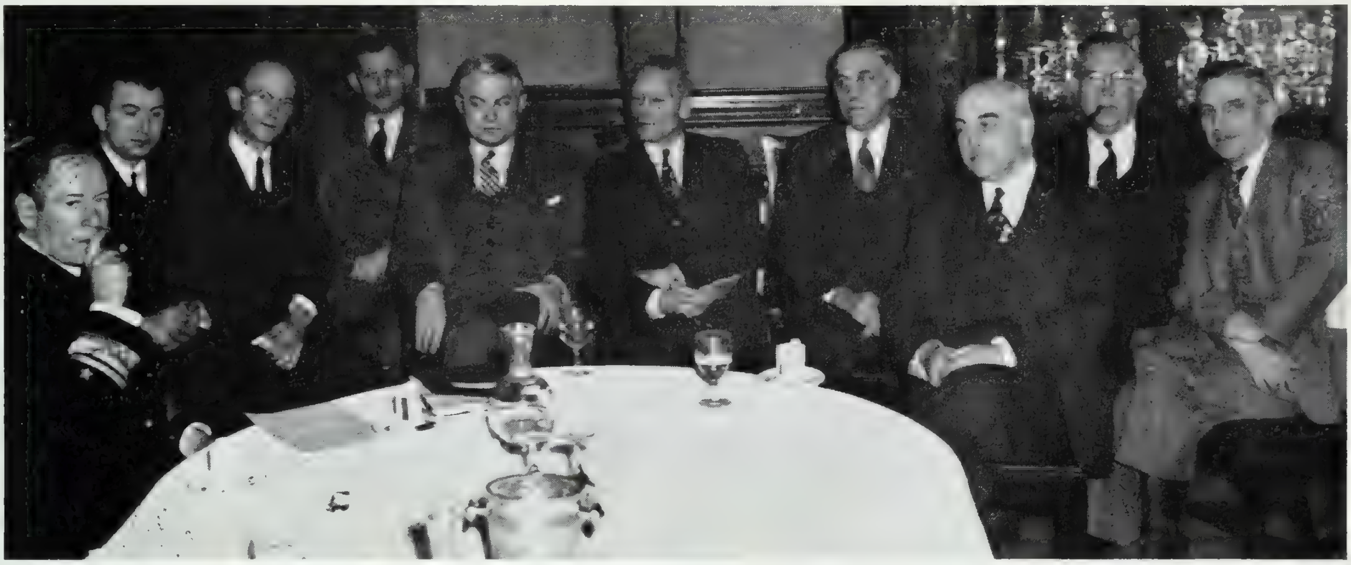
Technical Training

Skilled men are constantly being withdrawn from the shipbuilding industries by selective service. Therefore, in order to meet wartime production schedules, both men and women must train for immediate and nationally useful employment in technical positions and adapt their previous training and experience, when possible, to present and future production needs.

The University of California war training program, sponsored by the U. S. Office of Education, provides special short-term courses in fields essential to the war effort. All courses are tuition-free, and many qualify the trainee for excellent Civil Service opportunities as junior engineers, junior metallurgists, and other positions.

Running LIGHTS

Who When Where



THE DRIVING POWER OF THE U. S. MARITIME COMMISSION

(Left to right) Commissioner Howard L. Vickery; Lt. W. A. Weber, an Assistant to Commissioner Vickery; J. E. Schmeltzer, General and Technical Assistant to Commissioner Vickery; W. E. Spofford, Regional Director of Construction, (Great Lakes area—Chicago); C. W. Flesher, Regional Director of Construction, (West Coast Area—Oakland); Admiral E. S. Land, Chairman of the U. S. Maritime Commission; J. F. McInnis, Regional Director of Construction, (East Coast area—Philadelphia); J. L. Bates, Director, Technical Division; L. R. Sanford, Regional Director of Construction, (Gulf area—New Orleans); Arthur Rohn, Assistant Director, Technical Division; at the 50th annual meeting of the Society of Naval Architects and Marine Engineers, New York City, November 15.

Elliott Co. Appoints

Elliott Company announces the appointment of William R. Dunn as Pacific Coast manager to succeed the late Frank A. Calmus. Mr. Dunn, a graduate of the University of California in 1928, has been with the Elliott organization since that time. For the past nine years he has been district manager in Los Angeles. V. A. Peterson, formerly of the company's Denver office, has been named to the Los Angeles office as district manager. H. R. Bushley continues as the Northwest manager with Seattle headquarters. Hugh I. Jeffries has been added to the Los Angeles staff and R. L. Read has been assigned to San Francisco.

WILLIAM R. DUNN, newly appointed Pacific Coast manager.

Navy Board Renews "E" Award

The Crane Packing Company, which was the first company in its own industry to win the "Navy E Award" last spring, has again had this honor extended by the Navy Department for excellence in production volume. The company is presenting to its staff of employees throughout the country, an original memento of the award in appreciation of the loyal and cooperative effort contributed by each man and woman to the common cause.

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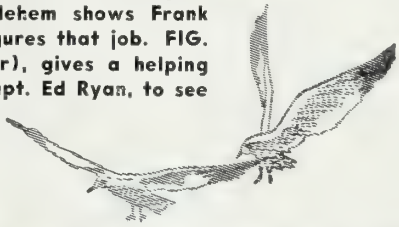
Los Angeles Bilge Club

ANNUAL BANQUET

FIG. 1: Club President "Cap" T. W. Peters talks things over with Lt. Commander Augustine, U.S.N., and Lt. Commander Quakenboss, U.S.N.R. FIG. 2: The Army likes the Bilge Club parties. Here we have (left to right) D. B. Turner, then Capt. A. W. Anderson, Major E. S. Clark, Major C. C. Creager, Capt. George Bower and Capt. Frank Dailey. FIG. 3: Left to right: Jack Martin (seated behind plate), L. J. Bratager, Lt. Commander Hans Olsen and A. M. Rosenfeld. FIG. 4: The American Bureau of Shipping boys (left to right): Albert Narter, Davie Marlaglun, John C. McKnight, Ed. W. Pipe and Harry Summers, Principal Surveyor. FIG. 5: Left to right: Jack Malseed, Capt. E. Roukema, Holland Merchant Marine; Arthur Eldridge, Mgr. Los Angeles Harbor Dept.; Lt. Commander Roy Smith; Ray Beaton, Asst. Mgr. Los Angeles Harbor Dept. FIG. 6: Left to right: Ed Solski, H. L. Prevost, Sam Cappelle and Charles McGuire. FIG. 7: Making sure they get their dinner are (left to right): H. L. Prevost, Sam Cappelle and Charles McGuire. FIG. 8: The boys from Calship are all good singers, too. Left to right: G. Leahy, C. Minor, F. Graydon, Betty Gordon, Jim Clark, R. L. Gilmore, H. E. McEwing and C. G. Read.

FIG. 9: Betty Gordon plays for a swell trio. Left to right: Tom Forster, L. Gould and Jim Smith. FIG. 10: Left to right: Lasker B. Gallagher sings "The Desert Song," joined by R. P. Kemmer, Edgar Black and Betty Gordon. FIG. 11: Union Oil's R. Cyrus takes heed while Bill Harrington of Bethlehem shows Frank Cavanaugh of L. A. Shipbuilding how he figures that job. FIG. 12: Director T. W. Buckholz (standing rear), gives a helping hand to Secretary Al Boro and Director Capt. Ed Ryan, to see that everybody is received in order.



All members and friends of the Bilge Club of Los Angeles agree that their fall banquet on October 9 was another fine gathering. This annual affair was held at the Pacific Coast Club at Long Beach, California, and members and guests who attended numbered over three hundred.

President of the Club, Captain T. W. Peters, gave lots of time and energy to make the meeting a success and reports that "as usual we had a swell party." And the smiling faces, photographed by Pacific Marine Review's Los Angeles Harbor photographer, give ample testimony to that fact.

The Bilge Club has recently moved to new headquarters—644 Avalon Boulevard, Wilmington, and this new address is rapidly becoming a very popular place.

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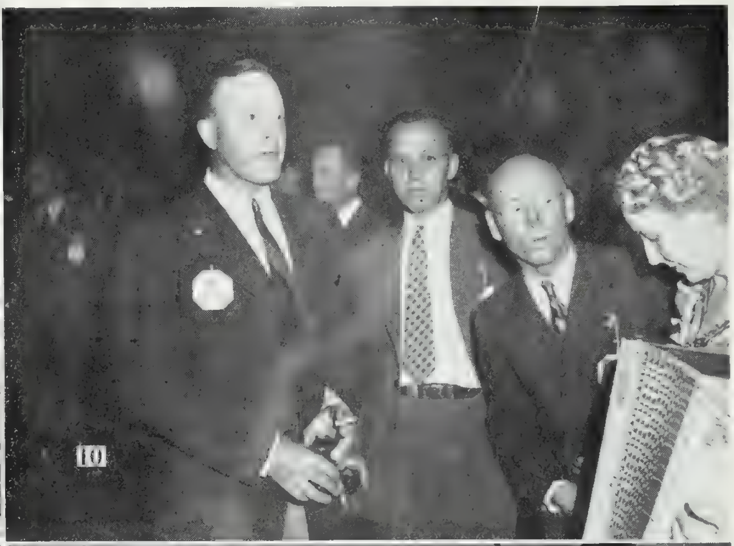

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Marine Section National Safety Council

Sectional officers of the National Safety Council have been elected for 1943.

Following are the names of officers and committee chairmen of the Marine Section. In their capacity as sectional leaders they will play an important part in the current nation-wide campaign to "Save Manpower for Warpower" the Council is conducting at the request of President Roosevelt.

General Chairman—**Carl E. Holmes,** Mgr., Claims Dept., Marsh & McLennan, Inc., 70 Pine St., New York, N. Y.

Vice General Chairman—**W. C. Garbutt,** Casualty Mgr., Pittsburgh Steamship Co., 614 Superior Ave., Cleveland, Ohio.

Advisory Committee (Past General Chairmen):

Byron O. Pickard, Chief Safety Eng., Waterfront Employers' Association of the Pacific Coast, 322 Financial Center Bldg., San Francisco, Calif.

Capt. Edward C. Holden, Jr., Mgr., Safety Dept., United States P. & I. Agency, Inc., 116 John St., New York, N. Y.

Capt. E. W. Fiske, Jr., Marine Transportation Dept., Socony-Vacuum Oil Co., Inc., 26 Broadway, New York, N. Y.

John S. Hunter, The Atlantic Refining Co., 3144 Passyunk Ave., Philadelphia, Pa.

Capt. Frank H. Cogan, Mgr., Marine Dept., The Delaware, Lackawanna & Western R.R. Co., Hoboken, N. J.

Arthur M. Tode, Consulting Eng., 17 Battery Place, New York, N. Y.

Assistant General Chairman (Executive Committee Activities)—**Frank J. Taylor,** Pres., American Merchant Marine Institute, Inc., 11 Broadway, New York, N. Y.

Assistant General Chairman (Membership)—**Cornelius H. Callaghan,** Mgr., The Maritime Association of the Port of New York, 80 Broad St., New York, N. Y.

Assistant General Chairman (Ship Construction and Repair)—**Carter Kendall,** Safety Eng., Bethlehem Steel Co., Bethlehem, Pa.

Assistant General Chairman (Marine Industrial & Public Relations)—**T. E. Buchanan,** General Mgr., Marine Dept., The Texas Co., 135 E. 42nd St., New York, N. Y.

Assistant General Chairman (Programs, Meetings & Conventions)—**E. P. Herges,** Safety Eng., U. S. Employees' Compensation Commission, 514-10th St., N.W., Washington, D. C.

Secretary—**Harold M. G. Wick,** Asst. to the Pres., American Bureau of Shipping, 47 Beaver St., New York, N. Y.

Editor, Marine News Letter—**Capt. Henry Blackstone,** Safety Eng., United States P. & I. Agency, Inc., 340 Pine St., San Francisco, Calif.

Admiralty and Maritime Counsellor—**Henry Eidenbach,** 111 John St., New York, N. Y.

Regional Activities & Committees

Chairman, Coastal Regions—**Vice Admiral R. R. Waesche,** Commandant, U. S. Coast Guard, Washington, D. C.

Assistant Chairman, Coastal Regions—**Capt. (E) H. N. Perham,** Chief, Marine Engineering Section, U. S. Coast Guard, Washington, D. C.

Director, Atlantic Region—**Willard F. Jones,** General Mgr., Marine Dept., Gulf Oil Corp., 17 Battery Place, New York, N. Y.

Assistant Director, Atlantic Region—**M. J. Hanlon,** Vice Pres., Black Diamond Steamship Corp., Pier K, Weehawken, N. J.

Director, Gulf Region—**A. H. Schroder,** Personnel Dir. & Safety Eng., Freeport Sulphur Co., Port Sulphur, La.

Assistant Director, Gulf Region—**E. P. Richard,** Mgr., Claims & Insurance Depts., Mississippi Shipping Co., Board of Trade Bldg., New Orleans, La.

Director, Pacific Region—**Edward J. Baird,** Secy., Waterfront Employers' Association of Southern California, Kress Bldg., Long Beach, Calif.

Director, Great Lakes Region—**A. T. Wood,** Lake Carriers' Association, 905 Rockefeller Bldg., Cleveland, O.

Director, Canadian Region—**John W. McGiffin,** Supt. of Safety, Canada Steamship Lines, Ltd., Montreal, P. Q., Canada.

Director, Ohio River Region—**G. O. Griffin,** Safety Dir., Dravo Corp., Neville Island, Pittsburgh, Pa.

Assistant Director, Ohio River Region—**J. E. Jackman,** Safety Eng., McCrady-Rodgers Co., 239-4th Ave., Pittsburgh, Pa.

Director, All Inland Waterways—**Lloyd A. Blanchard,** Chief, Safety Section, Corps of Engineers, Washington, D. C.

Special Service Committees

Chairman, Committee for the Advancement of the American Merchant Marine—**Rear Admiral Emory S. Land,** U. S. Navy (Rtd.), Chairman, U. S. Maritime Commission, Washington, D. C.

Chairman, Committee on Operations of Liners and Cargo Vessels—**Capt. Logan Cresap,** Marine Supt., Isthmian Steamship Co., 25 Broadway, New York, N. Y.

Chairman, Stevedoring Committee—**John W. McGrath, Jr.,** John W. MsGrath Corp., 29 Broadway, New York, N. Y.

Chairman, Statistics & Contests Committee—**Benjamin H. Self,** Mgr., Safety Engineering Dept., The Travelers Insurance Co., 55 John St., New York, N. Y.

Chairman, Poster Committee—**John Wright,** Mgr., Claims & Insurance Dept., American Export Lines, Inc., Pier F, Jersey City, N. J.

Assistant Chairman, Poster Committee—**A. T. Johnsen,** Claim Dept., American Export Lines, Inc., Pier F, Jersey City, N. J.

Chairman, Publicity & Publications Committee—**Harold J. Harding,** Editor, "Marine Progress," 95 Broad St., New York, N. Y.

Chairman, Engineering & Minimum Standards Committee—**A. J. Smith,** Marine Eng., Marine Office of America, 116 John St., New York, N. Y.

Chairman, Tankers Committee—**James E. Moss,** The Atlantic Refining Co., 3144 Passyunk Ave., Philadelphia, Pa.

Chairman, U. S. Navy Yards Safety Committee—**E. B. Landry,** Safety Eng., U. S. Navy, 19th & D Sts., N.W., Washington, D. C.

Chairman, Maritime Associations Committee—**Frank C. Gregory,** Labor Relations Mgr., Waterfront Employers' Association of San Francisco, 312 Financial Center Bldg., San Francisco, Calif.

Special Maritime Advisor—**Professor H. L. Seward,** Yale University, School of Engineering, 211 Strathcona Hall, New Haven, Conn.

Special Government Committees for Safety in National Defense, Shipbuiding, Inspections, and Personnel Training

Chairman, Naval Committee for Safety in National Defense—**Rear Admiral C. W. Fisher,** U. S. Navy, Dir. of Shore Establishments, Navy Department, Washington, D. C.

Chairman, New Ship Design and Construction Committee—**Rear Admiral H. L. Vickery,** U. S. Navy; Commissioner, U. S. Maritime Commission, Washington, D. C.

Chairman, Technical Committee (Design & Accident Prevention Measures)—**James L. Bates,** Dir., Technical Div., U. S. Maritime Commission, Washington, D. C.

Chairman, Ship Inspections Committee & U. S. Government Bureaus—**Capt. R. S. Field,** U. S. Navy Assistant to Commandant, U. S. Coast Guard, Washington, D. C.

Chairman, Committee on Education & Training of Ship Personnel—**Telfair Knight,** Chief, Division of Training, War Shipping Administration, Washington, D. C.

New Manager Farrel-Birmingham

Farrel-Birmingham Company, Inc. of Ansonia, Connecticut and Buffalo, New York, announces the appointment of **Edward S. Coe, Jr.** as manager of its New York office at 79 Wall Street, to succeed Mr. E. H. Thomas, recently deceased.

To his new post Mr. Coe brings a varied experience and knowledge of the company's products gained in a number of positions he has held in the company since 1936.

Following two years at the Buffalo plant on gear sales he spent a brief period at the New York office and then over a year as sales engineer in the Chicago office. The next three years were spent at sales engineering at the company's main office in Ansonia. For the past few months he has been in charge of expediting production of Farrel-Sykes gear generating machines.

Born in Worcester, Massachusetts, Mr. Coe received his early education there and graduated from Worcester Polytechnic Institute in 1931 with a degree of Civil Engineer. Following his graduation he worked at the Trenton and Worcester plants of American Steel & Wire Company for four years before joining Farrel-Birmingham Company.

Maritime "M" Awarded Minneapolis-Moline

When the Minneapolis-Moline Power Implement Company took on a contract in 1941 to produce cargo hoists and warping winches for merchant vessels, its management and employees resolved that no cargo consigned to the war fronts would remain on the dock for lack of equipment awaited from their plant.

That resolve won for the Minnesota firm and its workers the Maritime Commission's "M" award of merit, presented at the plant November 6. Presentation of the "M" pennant, and badges for the workers, was made by Samuel B. Hicks, representing W. E. Spofford, Regional Director of Construction, Maritime Commission, Chicago. W. C. MacFarlane, President and General Manager, other Company officials, and all employees took part in the ceremony.

DR. HENRY F. GRADY (left), president of the American President lines, congratulates Arthur B. Poole (center) and Charles L. Wheeler, retiring president, respectively of the Propeller Club of the United States, Port of San Francisco, for their untiring efforts as leaders in the movement of training American youth to command vessels of the American merchant marine.

As subcontractor of the American Hoist and Derrick Company of St. Paul, which received the Maritime "M" award in August, the Minneapolis-Moline concern is the main source of supply for winches. It has produced about $5,000,000 worth, and has orders for about $6,000,000 more. For years the company had manufactured farm implements, but in April 1941 contracted to produce 584 cargo hoists and warping winches. Delivery of these was completed in 12 months, or 75 per cent of the estimated delivery time. A second order for 1760 units was completed in nine months. The company is now working on its third order for 1143 units and is still ahead of schedule. There are approximately 3000 persons employed at the plant.

More Pacific Coast "E" Awards

Another well-known Pacific Coast industry has been singled out as having earned the famed Army-Navy "E." The famous award has been conferred upon the Columbia Steel Company of Pittsburg, California. This steel plant is extensively engaged in the production of war material and has achieved an enviable record in production.

This award follows a similar announcement in which "E" awards have also been made to the Barrett & Hilp Construction Company for their work at the Mare Island Navy Yard, the San Francisco shipyard of the Bethlehem Steel Company and the Naval ammunition depot at Hawthorne, Nevada. Appropriate ceremonies are planned. Such accomplishments are by no means ordinary, and it is a pleasure to note the ever lengthening list of Pacific Coast organizations which are recognized as doing an outstanding wartime job by our Government.

MACHINERY COORDINATOR

Harry B. Taylor

The title, Pacific Coast Machinery Coordinator for the U. S. Maritime Commission, indicates a wide technical and practical experience with marine machinery, and that is exactly what we find in the person of Machinery Coordinator Harry B. Taylor. The present program of the Maritime Commission on the Pacific Coast includes every form of marine propulsion machinery, embracing: reciprocating steam engines, diesel engines, geared steam turbines, and turbine-electric drive; and with all these, he has had direct experience in design, construction, installation and operation.

A graduate of Armstrong College, Durham University, England, Mr. Taylor served his time first on reciprocating engines and then in the shops on the test floor, on installation work aboard ship, and in the drawing office of the Parsons Marine Steam Turbine Company. He worked on the construction and installation of the first geared-turbine drive and of the first exhaust-turbine drive, and designed the first shaft calibration gear. In fact, Harry Taylor in those days was one of the staff of hard-working enthusiastic technicians whose labors gave birth to the modern steam turbine marine propulsion plant.

Mr. Taylor next joined the staff of the superintending engineer of the Midland Railway Co., who were operating a fleet of fast cross channel steamers — both turbine and reciprocating jobs.

In 1910 he carried out ship resistance tank experiments on stern forms for the fast coastwise steamers of the Grand Trunk R. R. Co., making the three-months' trip on one of them as engineer to British Columbia in the same year. Liking the Coast, he joined the Seattle Construction and Dry Dock Co, as assistant chief engineer. At this time, he was associated in the early experimental work on pressure atomizing oil burners.

At the opening of World War I, Mr. Taylor returned to British Columbia and registered and volunteered for submarine service. Later, he was chief engineer for the Wallace Shipyards, the Coghlan Co., and the Davis Hartney Co., all of British Columbia. These firms handled marine installation of reciprocating engines, geared turbines, and diesels, respectively.

Shortly after the Armistice, he joined the engineering staff of the Emergency Fleet Corporation of the U. S. Shipping Board, where he designed the standard turbine lubrication system as a member of the turbine section. He was transferred to the Department of Maintenance and Repair of the Headquarters Staff, and became: chief turbine engineer of the Shipping Board; chief inspector of the North Atlantic Division; senior engineer of the trial board; head of the performance section; and member of the Fuel Conservation Committee.

As superintending engineer for the Pacific Mail S. S. Co., Mr. Taylor had charge of the famous "535" passenger steamers. He resigned and went into consulting work.

In 1920 he joined the Society of Naval Architects and Marine Engineers, and in 1921 became an associate member of the American Society of Naval Engineers.

When the Maritime Commission began their ship construction program on the Pacific Coast, Harry B. Taylor was appointed principal machinery inspector at the Western Pipe & Steel plant on their first contract for five C-1-B geared diesel electric-coupling drive vessels. As the Commission program expanded, he was selected for Pacific Coast Machinery Coordinator—a position entailing work with which he is thoroughly familiar and very much at home.

Our salute to Harry Taylor, an experienced engineer, an earnest student, a hearty friend.

McMillan To Ship Stabilization

Appointment of **Ernest A. McMillan** as Deputy Chairman of the Shipbuilding Stabilization Committee was announced at Washington October 12 by **Paul R. Porter,** Chairman of the committee.

Prior to his appointment, he was a member of the State Board of Harbor Commissioners, who operate the Port of San Francisco.

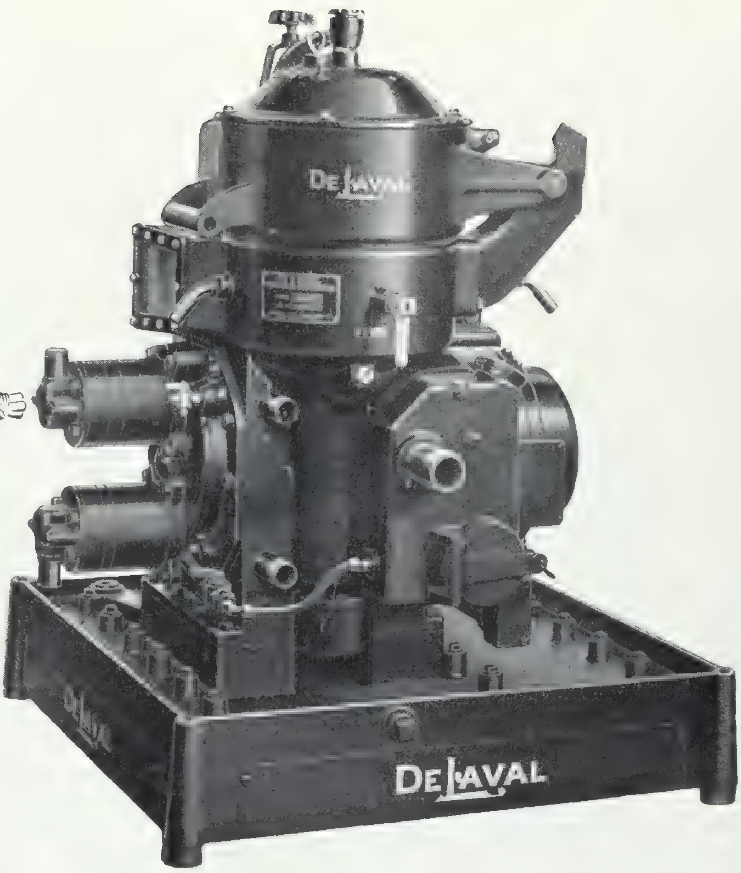
He is a member of the Brotherhood of Railway Clerks, and served several years as general chairman of that organization on the Southern Pacific Railroad, Pacific System.

Shifts and Changes

T. G. Maddox, veteran in San Francisco shipping circles, has become associated with the United States Lines, in an executive capacity. He was formerly with the Luckenbach Lines and Williams, Dimond & Co.

Mrs. Sparling, wife of C. E. Sparling, maritime inspector at Yard No. 1 of the Pacific Bridge Company, Alameda, presented her husband with a baby girl recently.

What will you do when your Diesel wears out ?



You can't afford to permit a perfectly good Diesel to wear out in these times when it is so difficult to buy parts to make repairs.

You cannot afford it now nor in times of peace when ships, engines and parts will be more easily replaceable. But your Diesel will wear out long before its time if millions of savage little abrasives are permitted to circulate in the oil to the vital wearing parts.

The De Laval Centrifugal Oil Purifier continuously removes those abrasives, and keeps the lubricating oil clean, so that it gives real protection. Then the engine can give years of additional service at lower cost per year.

To save your Diesel and to Keep 'em Turning use De Laval Oil Purifiers for both lubricating and fuel oil.

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KEEP 'EM TURNING

DE LAVAL OIL PURIFIERS

APPRENTICE TRAINING

(Continued from page 67)

them, one or two at the time, into the shops or on the ships in charge of a competent instructor who has previously analyzed the trade and broken it down into teaching units. Since production is expected from the start, it is well to provide the beginner with a basic set of good tools, either as a loan, or as a gift with attached conditions covering breakage and loss, or their return intact should apprenticeship be surrendered before the full term is consummated. The instructor, an expert teacher, uses current production in giving instruction, and he, with his dozen or more apprentices, will be carrying along a goodly share of the job. If the instructor is the competent craftsman he should be, the departmental head will not hesitate to entrust to him jobs of importance. Furthermore, cost returns will usually make very pleasing reading.

A recent check in a certain plant showed the following important jobs being done entirely by apprentices and their instructors on a given day: Boring stern tubes on aircraft carriers; all shipwright work on a cruiser; installing anchor handling gear, steering gear and boat cranes on battleship; all kinds of fitter and mold loft work; operation of all sizes of lathes, boring mills and other machines engaged in regular shop production; and hundreds of other jobs too numerous to list. No apprentice was functioning as a helper. Each had his own assignment, and with high purpose, all were setting fine examples for hundreds of trainees and upgraders. They were contributing more than mere production to our war effort.

It has been found desirable to divorce these instructors from departmental rolls, and set them up as a separate functionalized group reporting to a head independent of production. There is ever present, due to work pressure, a tendency to sacrifice training for production; and while this may be an immediate benefit, the long-term advantage of thorough training is prejudiced. After all, the purpose of any apprentice program is to produce craftsmen capable of performing any task given them, and this can be done only by providing the broadest possible experience while the boy is in training.

The apprentices are on the departmental roll, and their time in the shops is charged to the job on which they are working. The instructor acts as a specialized supervisor for the department, cooperating fully with the departmental head in all matters of production, yet responsible to an independent head for training progress.

To meet minimum Federal standards, 144 hours per year of related instruction must be provided for each apprentice. Sometimes classes are held at night under the auspices of the local schools, using local school facilities; others have groups engage in correspondence study with a monitor in charge; still others provide facilities in the plant and schedule classes during work hours, which permits independent operation.

In view of the wide range of trades represented in shipbuilding, the curriculum must of necessity include only those studies common to all crafts, such as applied mathematics, applied science, mechanical drawing, practical shipbuilding, and plant management. Job instruction will be received on the job from the shop instructor.

For the plant school, the faculty may be a part time assignment to personnel otherwise employed, or, where there are a considerable number of apprentices involved, a full-time faculty may be engaged. The latter plan offers great possibilities for molding youth into good citizenship as well as good craftsmanship. Straight thinking on many problems is needed more today than ever before, and here lies the opportunity to do an excellent job in this respect.

An old adage may be rewritten to read, "All work and no play makes Jack a mischievous boy in the shop." Horseplay is natural in boys of apprenticeship age, and this fact should be reckoned with in setting up a complete program. Give these boys a chance to "blow off steam" after work hours while insisting that all playing be done at that time, and shop discipline as a problem vanishes. Of course, these after-hour activities should be carefully set up and supervised, and paid for by the boys themselves through some kind of student organization. Such programs may include football, baseball, track, basketball, boxing, wrestling, bowling, golf, tennis, fencing, orchestra, band, glee club, minstrel and dramatic entertainment, journalism, year book — in short, any kind of activity which will challenge the interest of any group of boys. Here they will learn team work, cooperation and fair play in an unforgettable manner. There will be ample "carry over" of these desirable qualities into the shop, and morale will be continuously infused into the body of the apprenticeship. Accomplishment will replace mischief, and pride will spur the boy on to ever higher endeavor. Ten years of this and plant personnel will undergo a change for the better.

APPRENTICE GRADUATES of a shipyard listen to the address of H. L. Furguson, champion of apprentice training.

Abstract of the concluding section of a paper on "Wartime Training of Shipbuilders" read before the Fiftieth Annual Meeting of the Society of Naval Architects and Marine Engineers, New York, November 13, 1942.

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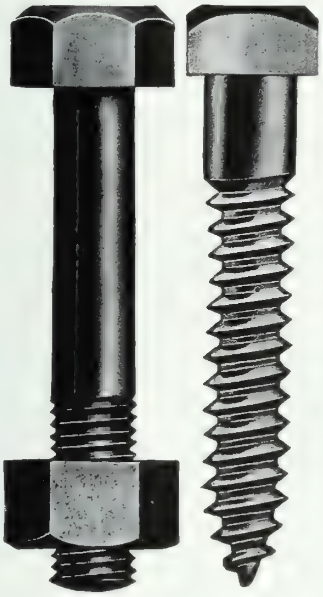


Milton Bolts In Ship Fabrication

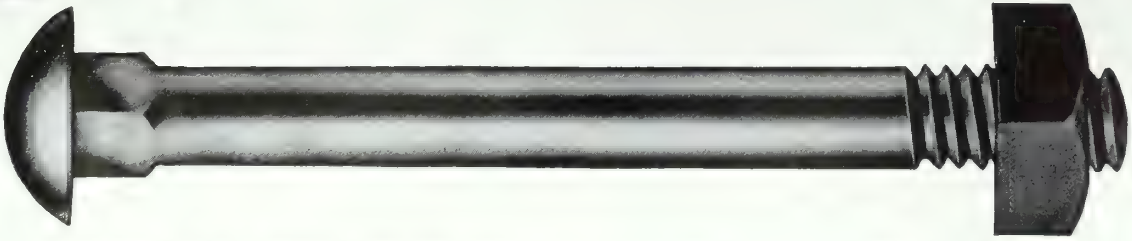
In War Vessels on the High Seas
In War Vessels a-building

Liberty Ships—Wooden and Concrete Barges—Net Tenders

WHEREVER BOLTS ARE USED in Ship Construction the MILTON product stands for all-embracing service-giving dependability

Prompt Shipment of Standard Diameters

Carriage up to 1¼″
Machine up to 1¾″
Lag up to 1″



THE MILTON MANUFACTURING COMPANY : Milton, Pennsylvania

KEEP POSTED

(Continued from page 92)

TINY DIESEL INJECTION SPRAY NOZZLE being tested for accuracy of bore under high pressure.

Testing the Heart Of a Diesel Engine

A tiny injection-spray nozzle, smaller than the tip of the small finger, is literally the heart of a diesel engine.

One of these nozzles is pictured in the accompanying illustration undergoing test at the laboratories of The Cooper-Bessemer Corporation, manufacturers of diesel and gas engines and compressors, with plants at Mount Vernon, Ohio, and at Grove City, Pa.

The testing device, developed by research specialists of the company, checks the accuracy of these tiny diesel engine fuel-spray nozzles. During the test, each nozzle is fitted into an overhanging arm, and fuel oil is forced through at tremendous pressure.

These injection-spray nozzles employ a ring of from six to ten holes. Each hole is drilled individually to a diameter as small as eight one-thousandths of an inch, and their operation is similar to that of an atomizer. The smaller the holes, the finer the spray, and the more efficiently the oil burns.

"Each stream of oil," states R. L. Boyer, chief engineer, "must strike the mouth of its particular test tube receiver accurately, and deliver the proper amount of oil in a certain specified time. If the spray nozzle fails to do this, it is rejected, for the test has proved that the bores have not been made with sufficient accuracy.

"These spray nozzle holes must be drilled at precisely the same angle to assure uniform injection of fuel. For if uniformity of injection is not obtained, the diesel engine cannot operate at its peak efficiency.

"The first diesel engines used compressed air to blow the fuel oil into the cylinders. Then came the airless-injection type of engine, which employed what was called 'mechanical injection.'

"One of the biggest advances that The Cooper-Bessemer Corporation has made in modern diesel engineering was the development of the pressure-relief type of fuel injection from the older constant-pressure system.

"The newer development has proved far preferable. It might more accurately be referred to as a 'controlled-pressure' injection system. The newer method has been a great aid to the efficient operation of diesel engines at slow speeds, and marine engines so equipped have given vessels outstanding maneuverability, which is obviously a great wartime boon.

"The pressure-relief type of fuel injection, furthermore, enables the diesel operator to receive better service on repairs, as this injection system is interchanegable on all standard models of diesel engines."

A Very Adaptable Turret Mill

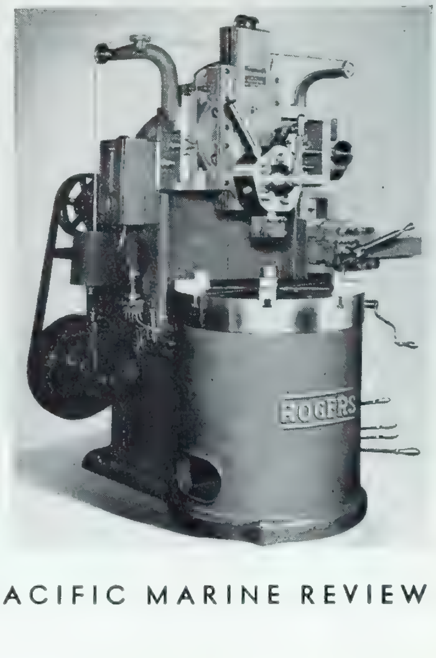
Announcement of Rogers "Perfect 36" vertical turret mill has been made by Daniel F. Ganey, Jr., vice president and secretary of the Rogers Machine Works, Inc., at Buffalo, New York.

This turret mill is designed for boring, drilling and turning ferrous and non-ferrous castings, forgings and similar pieces.

Rogers specially designed swivel head and main head provide two operations on the work at the same time. By incorporating the swivel design in the side head, quicker and simpler tool setting for irregular pieces is made possible by the ability to set the side head to any angle up to 35° either way. Built-in graduated dial saves time in making set-ups for original and second runs. Large bearing area of tool stake and side rail, with positive clamping assures rigidity and close tolerance work.

"Table level" horizontal chuck allows the work to slide easily and quickly into exact position, which eliminates the usual "horsing" and balancing of the work while clamping to the chuck.

In addition to the swivel side head and horizontal chuck table, the Rogers vertical turret mill has



Security Engineering Receives "M" Award

(Left) Charles E. Walsh, Jr., chief of Procurement Section, U. S. Maritime Commission, (center) W. E. Sievers, executive vice president and (right) Otto Hammer, vice president and chief engineer of Security Engineering Co., Inc.

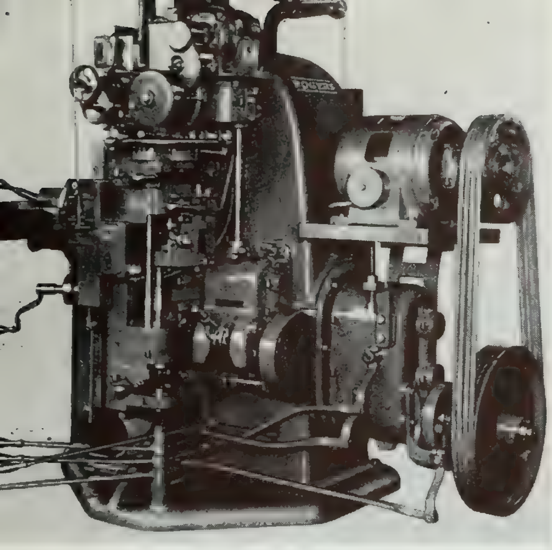
The highest honor bestowed by the U. S. Maritime Commission—the "M" Burgee—was awarded Security Engineering Co., Inc., of Whittier, California, on November 23 in colorful ceremonies held at the plant and attended by an audience of about 2000 persons. In addition to the Maritime "M," the Commission awarded production badges to employees of the firm in recognition of their outstanding production achievements. The honors were awarded for an excellent record in converting to wartime manufacture of new products, for the originality of the production methods employed, for simplification of product design which further increased production and eliminated bottlenecks, and for the high standards of quality maintained from the very first, despite difficult production schedules.

The ceremonies were attended by a number of military and government officials including Charles E. Walsh, Jr., Chief of Procurement Section, Production Division, United States Maritime Commission, Washington, D. C.; H. C. Acker, United States Maritime Commission, Oakland, California; Commander J. C. Arnold and Lt. Commander Clarence Froome of the United States Navy; Major C. W. Clark of the United States Army; Commander C. W. Thomas and Lt. Max Sturges of the United States Coast Guard. James Vandiveer, Director of Special Events for Radio Stations KFI and KECA, acted as Master of Ceremonies and appropriate music was furnished by the Eleventh Naval District Coast Guard Band under the direction of Rudy Vallee, Bandmaster.

Charles E. Walsh, Jr. presented the Maritime "M" pennant and W. E. Sievers, Executive Vice President, accepted the award.

Considerably before Pearl Harbor, Security Engineering Co., Inc., foresaw the necessity of all industry engaging to full capacity in war production and began the manufacture of valves and fittings for the shipbuilding program. The company has since helped to overcome transportation difficulties by providing Pacific Coast shipyards with a local supply of vital equipment needed in ship construction.

Shown below is a part of the 2000 persons who attended Security Engineering Co., Inc. ceremonies at which the Maritime "M" Burgee was awarded.



a motor-driven rapid traverse, heavy-duty main clutch that runs in oiltight case, convenient foot controls and strong rigid frame.

The capacity of this Rogers "Perfect 36" model is 36" diameter. Table face to turret face is 24" maximum, 0" minimum. Main head and side head have 8 vertical and horizontal feeds each. Spindle speeds can be set to any one of 8 speeds. Screw-cutting attachment is available.

"Blackout" Ventilator

Fresh air for officers' and crews' quarters on blacked-out vessels at sea under wartime conditions is made possible through a patented device now under manufacture by the Atlas Marine Supply Company of San Pedro. This device, the product of a local inventor familiar with wartime conditions on vessels on the West Coast, is on display at the office of the manufacturing firm, 264 Seventh Street, San Pedro.

Installation of this "blackout" ventilator has already been made on several offshore ships, and according to Sigmund Baardsen, head of the manufacturing firm, it has met with instant success.

In describing this ventilator, which is inserted in the wind scoop normally used to direct fresh air into crews' quarters through the porthole, Mr. Baardsen stated that it is designed to consume the least possible metal in order to meet priority requirements.

While the wind scoop may be used during daylight hours, the total blackout restrictions at night has meant a complete lack of fresh air on all vessels not equipped with a ventilating system.

Painted black to restrict the amount of reflected light, the ventilator is a sleeve approximately six inches long, which fits tightly into the wind scoop. The sleeve contains three baffles, or semi-disks, arranged to permit the passage of air and excluding light. It combines features that permit a maximum of fresh air under total blackout conditions.

The invention has met with the approval of local Maritime Commission officials and it is expected that it may become standard equipment on all Liberty ships.

Figure 1 is a longitudinal sectional view of the blackout ventilator.

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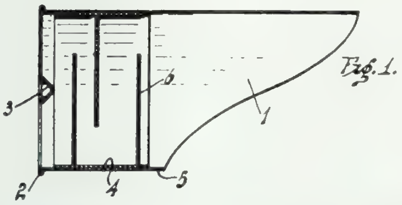
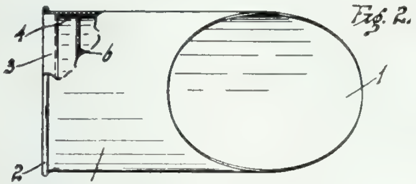
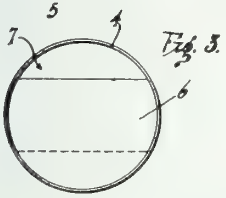
Figure 2 is a front elevation of the same, with parts broken away to show interior construction.

Figure 3 is a top plan view of the blackout insert sleeve.

Referring more particularly to the drawing, the numeral 1 indicates the usual and well-known air deflector, or scoop which is inserted through the porthole and into a compartment or the ship, all of which is usual and well known. The wind scoop includes a bead (Fig. 2) on the inner end thereof, which limits the outward movement of the scoop, and a transverse handle (Fig. 3) is provided and fixedly attached to the body of the scoop whereby the scoop can be removed from the porthole, or placed in position when desired.







The blackout insert comprises a sleeve (Fig. 4) which fits the inner cylindrical portion (Fig. 5) of the scoop (Fig. 1). A plurality of transversely extending baffles (Fig. 6) is provided in the sleeve (Fig. 4). These baffles are partial disks and are spaced at one end from the wall of the sleeve (Fig. 4), as is shown in Fig. 7. The partial disks (Fig. 6) overlap, thus providing a tortuous passage for the incoming air, and also providing effective baffles preventing the emission of light through the porthole.

INTO THE MIKE, the bos'n pipes "General Quarters," the man-all stations call . . . the sound is transmitted to loudspeakers throughout the ship and Uncle Sam's fighting men spring to action! • Remler Company, Ltd., is one of a number of firms entrusted to furnish sound and announcing equipment of this type to maintain communications throughout the ship; between ships; and with shore stations and planes overhead. The equipment is ruggedly constructed to meet the critical standards of accuracy necessary under combat conditions. • Remler is proud of its assignment to furnish this type of equipment for the U. S. Navy and U. S. Maritime Commission.

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Announcing & Communication Equipment

ELECTRICAL PLUGS AND CONNECTORS

A Detachable "Stinger"

To build ships faster by speeding production welding operations, a new Jackson insulated welding electrode holder with detachable "stinger" has been introduced by Jackson Products, Detroit, Mich. The female section of the cable connector is permanently soldered to the cable lead and remains in the insulated handle (A). The detachable jaw section—the "stinger" (B)—is snapped into the female section by a quick twist of the operator's wrist and is ready for business. The actuating cam mechanism that locks male and female sections together is shown at C. The lock is said to be positive and may be quickly disengaged.

The manufacturers claim that the use of this holder eliminates waste of time in changing cable connections and does away with dangerous loose cable ends kicking about when the "stinger" end is detached. When necessary, the handle (A) and the cable may be pulled through a small hole and the "stinger" then connected, saving time and cable extensions. Each welder is responsible for his own holder. Disconnecting the "stinger" at the end of a shift, he may turn it in for inspection and servicing, thus extending holder life.

This new holder, called the Jackson "Quik Trik", is made in three models, all insulated—Model TA-1, 300 amp., with stationary jaws; Model TA-2, 300 amp., with replaceable jaws of Mallory 3 Metal; and Model TA-3, 500 amp., also with replaceable jaws of Mallory 3 Metal.

A New Coston Safety Lamp

Added protection for crews of Coast Guard and merchant marine vessels involved in submarine attacks is afforded by a new plastic-housed, electric water lamp attached to life preservers and life-rafts.

Upon hitting the water, a weighted base turns the light upright, automatically illuminating it. The light will burn continually for 10 hours or longer, indicating to rescue craft the position of drifting seamen.

Use of "Lucite" methyl methacrylate plastic—the same plastic from which transparent sections of military airplanes are made—has reduced the weight to one-fifth that of the usual water light. The housing weighs about 19 ounces, the entire light just over three pounds.

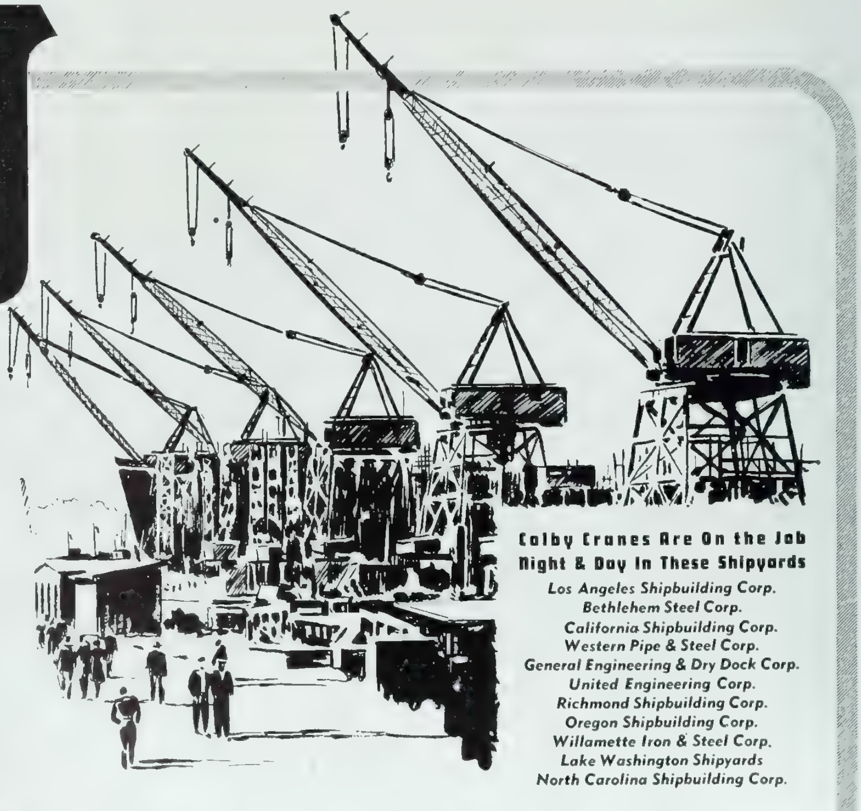
The tough plastic is water resistant, protecting the lamp and battery through long, hard wear. The housing is molded by Erie Resistor Company of Erie, Pa., for Coston Supply Company of New York City, from "Lucite" made by the Plastics Department of E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware.

1900 TO GO
and our necks
are NOT out

Out of the 2300 merchant ships scheduled to be built by the end of 1943, nearly 1900 remain yet to slide down the ways.

But the tooling up is behind us . . . mass production technique will do the job. Over 150 long-boom Colby cranes . . . in batteries of 5-10-15 . . . are swinging haymakers right and left 24 hours a day.

We are proud to be meeting our responsibility in this—the greatest maritime production schedule in history.



Colby Cranes Are On the Job Night & Day In These Shipyards

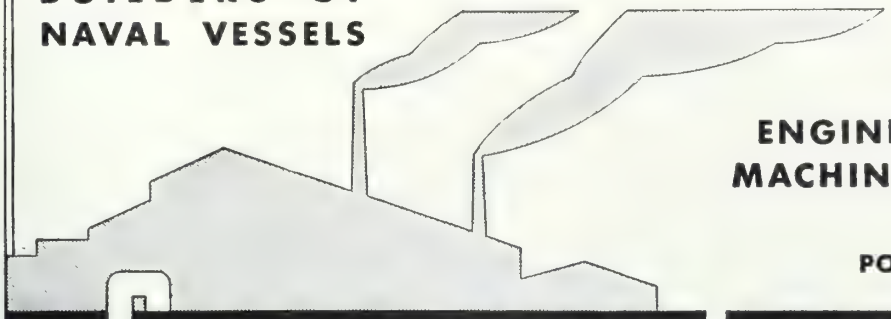
Los Angeles Shipbuilding Corp.
Bethlehem Steel Corp.
California Shipbuilding Corp.
Western Pipe & Steel Corp.
General Engineering & Dry Dock Corp.
United Engineering Corp.
Richmond Shipbuilding Corp.
Oregon Shipbuilding Corp.
Willamette Iron & Steel Corp.
Lake Washington Shipyards
North Carolina Shipbuilding Corp.

COLBY STEEL AND ENGINEERING COMPANY

15 Park Row
NEW YORK CITY

Central Building
SEATTLE, WASH.

Birks Building
VANCOUVER, B. C.



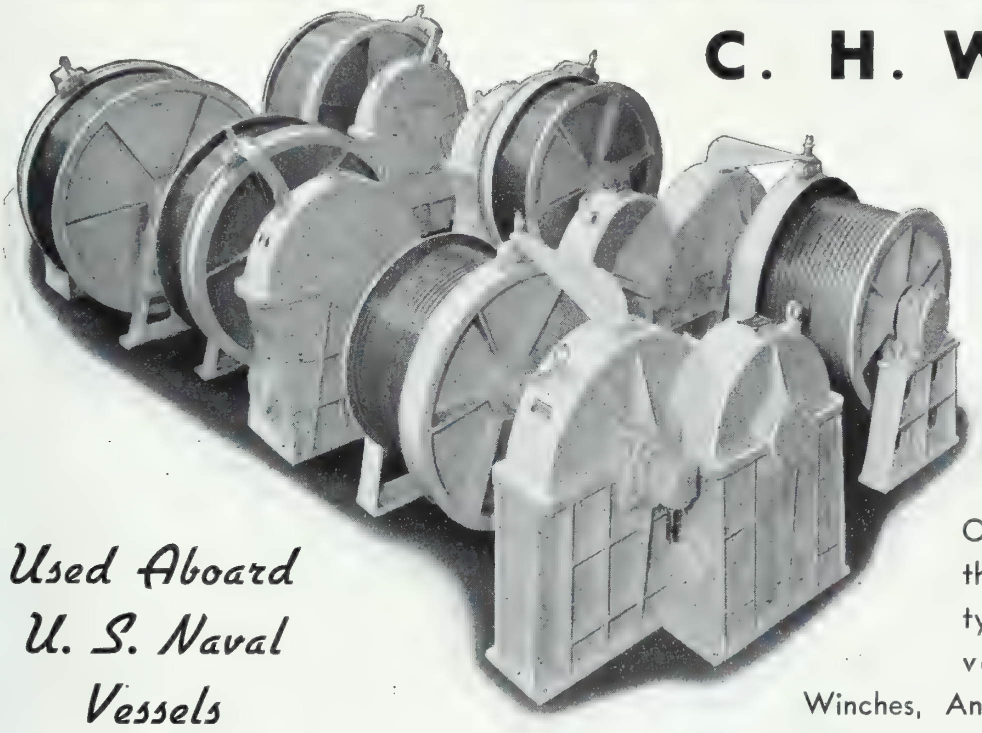
BUILDERS OF NAVAL VESSELS

ENGINEERS MACHINISTS

FOUNDERS SHIPBUILDERS

PORTLAND **OREGON**

COMMERCIAL IRON WORKS



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C. H. Wheeler manufactures the following products for all types of naval and merchant vessels: Capstans, Deck Winches, Anchor Windlasses, Airplane Cranes and Boat Cranes, Surface Condensers, Steam Ejector Type Air Pumps.

Used Aboard U. S. Naval Vessels

C. H. WHEELER MANUFACTURING CO., Philadelphia, Pa.

SAN FRANCISCO REPRESENTATIVE
Halloran & Pardee
Sharon Building

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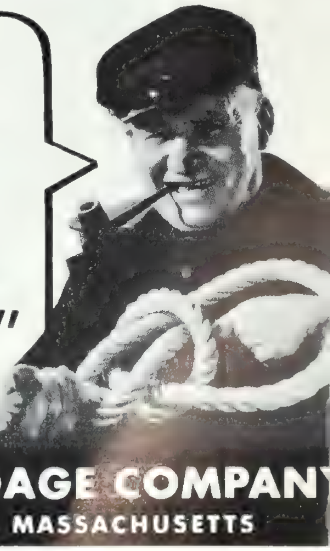

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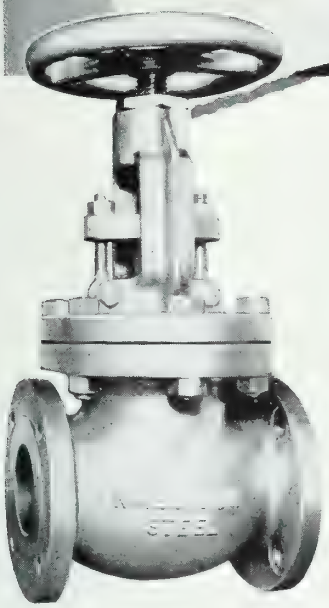

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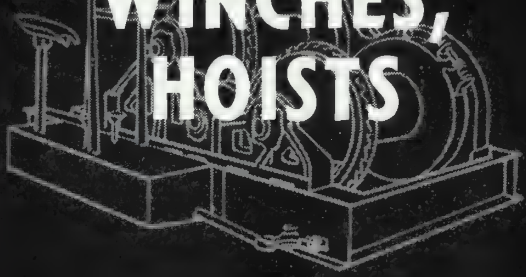

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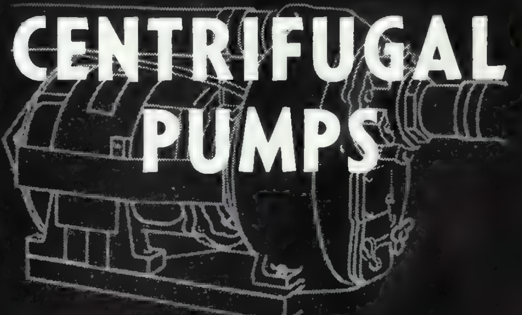

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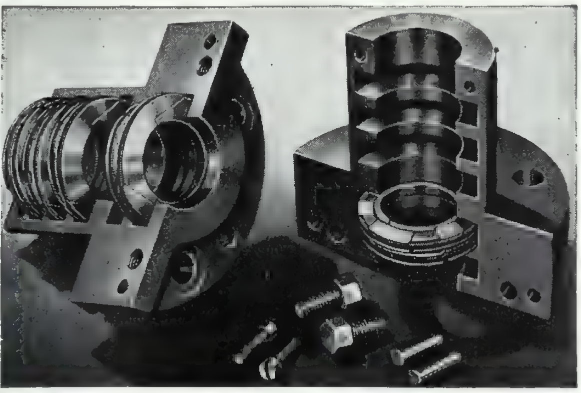

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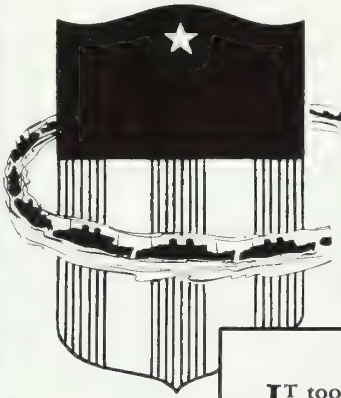

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Hull Supt.: Russ Brown.
Outfitting Supt.: Chester Larsen.
Office Mgr.: F. A. Jolly.

RICHMOND SHIPYARD NUMBER TWO
of Richmond Shipbuilding Co.
Richmond, California

President: Henry J. Kaiser.
Vice Pres. & Gen. Mgr.: Clay Bedford.
Adm. Asst.: H. J. Kaiser, Jr.
Act. Adm. Asst.: T. A. Bedford, Jr.
Gen. Supt.: H. J. Friel.
Yard Supt.: O. H. McCoon.
Hull Supt.: Dave Anderson.
Office Mgr.: Dave Olson.

RICHMOND SHIPYARD NUMBER THREE
of Kaiser Co., Inc.
Richmond, California

President: Henry J. Kaiser.
Vice Pres. & Gen. Mgr.: Clay Bedford.
Asst. Mgr.: D. C. Peacock, Jr.
Gen. Supt.: Andy Mori.
Yard Supt.: Hugh Williams.
Hull Supt.: Nello Tombolesi.
Office Mgr.: S. D. Raudenbush.
Special Consultant: Ed Hannay, Sr.

S. E. SAGSTAD BOAT WORKS
Seattle, Washington

Construction Supt.: Alf Hansen.
Naval Architect: H. C. Hanson.
Chief Engineer: H. A. Thompson.
Purchasing Agent: H. A. Schurman.

SAN PEDRO BOAT & YACHT COMPANY
San Pedro, California
Purchasing Agent: G. J. Lloyd.

SAN DIEGO MARINE CONST. CO.
Foot of Sampson St.
San Diego, Calif.
President: O. J. Hall.
Vice President: Ralph J. Chandler.
Manager: S. D. Manse.
Naval Architect: Dean B. Johnson.
Chief Engineer: Ben White.
Purchasing Agent: Harry Plumberg.

SAN PEDRO BOAT & YACHT COMPANY
Port Angeles, Washington

SEABELL SHIPBUILDING CO.
Seattle, Washington

SEATTLE S. B. & D. D. CO.
2629 West 54th
Seattle, Wash.
President: Fred Bianco.
Vice President: Robert Scobie.
Manager and Sec. Treas.: R. B. Bivins.
Naval Architect: W. C. Nickum & Sons.
Chief Engineer: Fred Foerster.
General Superintendent: Wm. Larsen.
Purchasing Agent: A. R. Pickering.

SEATTLE-TACOMA SHIPBUILDING CORPORATION
Plant No. 1—Tacoma, Washington
Foot of Alexander Ave.
President: R. J. Lamont.
Vice Pres. and Gen. Mgr.: Walter L. Green.
Chief Engineer: Chas. D. Gillet.
Purchasing Agt.: Howard J. Flanders.

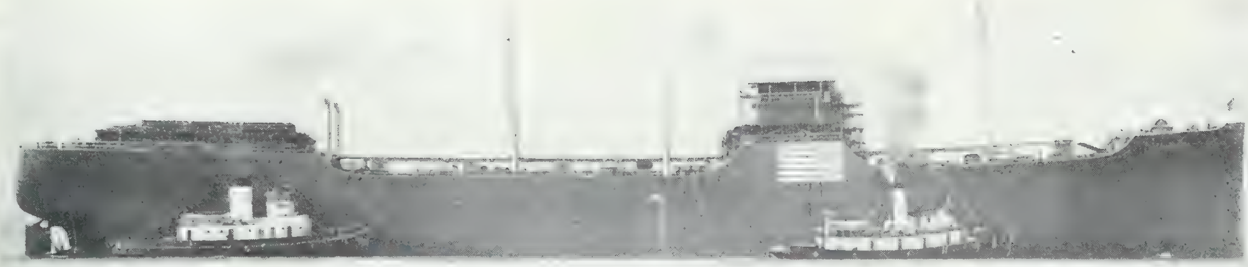
Plant No. 2—Seattle, Wash.
2400-11th St., S. W.
President: R. J. Lamont.
Vice Pres. & Gen. Mgr.: O. A. Tucker.
Secretary-Treasurer: R. L. Dalton.
Chief Engineer: F. G. Greaves.
Purchasing Agent: C. E. Bothwell.

THE SHAIN MANUFACTURING CO.
Seattle, Washington

SOUND SHIPBUILDING CORP.
Seattle, Washington
Plant: Olympia, Washington

STANDARD SHIPBUILDING CORP.
P. O. Box 217
San Pedro, California
President & Mgr.: John A. Cosmas.
Vice President: Walter H. Walker.
Naval Architect: V. Yourkevitch.
V. P. & Chief Engr.: George Logothetis.
Treasurer: J. Y. Leveque.
Yard Supt.: Chris Hansen.
Purchasing Agent: D. H. Moore.

STEPHENS BROS.
345 N. Yosemite St.
Stockton, Calif.
President: R. R. Stephens.
Vice President: Richard T. Stephens.
Manager: Theodore Stephens.
Naval Architect: Richard T. Stephens.



KINNEY PUMPS FOR MARINE SERVICE

A major portion of Kinney wartime activities is the manufacture of pumps for marine service. Among the types offered are:

MODEL HQGC—4 sizes, from 1200 to 3000 bbls. per hour. Handles gasoline, all grades of lube oil, distillate, and heavy fuel; sea water and molasses. Only two stuffing boxes—readily accessible. No priming or stripping pumps needed.

MODEL HQAC — 6 sizes, from 750 to 3000 bbls. per hour. Handles all grades of cargoes from gasoline to heavy viscous liquids and ballast water. External bearings and timing gears; horizontal suction and vertical discharge connections.

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Chief Engineer: Kenneth J. Short.
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WEST COAST SHIPBUILDING & DRYDOCK CO.
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Assistant General Mgr.: Tracy Gaffey.

WESTERN BOAT BUILDING CO., INC.
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Vice President: H. M. Petrich.
Manager: M. A. Petrich, Jr.
Naval Architect: Allen Petrich.

WESTERN PIPE AND STEEL CO.
South San Francisco, Calif.
San Francisco Office: 200 Bush St.
President: H. Tallerday.
Vice President (Los Angeles): L. N. Slater.
Vice President: R. D. Plageman.
Vice Pres., Sec. & Treas.: W. G. Aldenhagen.
Vice Pres. in Charge Shipbuilding Operations: L. W. Delhi.
Asst. Supt.: M. Maltseff.
Naval Architects: Joslyn & Ryan.
Hull Superintendent: O. B. Kibele.
Outfitting Supt.: G. Williams.
Chief Engineer: A. W. Tate.
Supervisor of Purchasing: E. C. Kremer.
Purchasing Agent: Stuart Rose.

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Exec. Vice Pres.: Austin F. Flegel, Jr.
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Naval Architect: A. O. Brown.
Chief Engineer: J. R. Daley.
Purchasing Agent: C. L. Brainerd.

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Manager: A. W. Copp.
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VIKINGS PORT
900 Coast Highway
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HOT OFF THE PRESS

"Ilg Fights Its Second War" headlines a colorful new brochure now being distributed by the Ilg Electric Ventilating Co. of Chicago, Illinois.

In forty-two duotone photographs, the company pictures the use of Ilg self-cooled motor propeller fans, Universal Blowers and Unit Heaters in both World War I and World War II . . . comprising a comprehensive bird's-eye-view of the nation's war efforts in 1917-18 and 1941-42.

From "blackout" ventilation systems for war-crowded factories to portable fume exhausters for welders in shipyards . . . from cooling communication apparatus on big bombers to heating and ventilating barracks and mess halls . . . from small blowers for the Signal Corps to huge marine-type apparatus for the Navy . . . and all the way in between . . . the wartime news of Ilg equipment is pictured in beautiful color illustrations.

An important factor in naval and maritime construction, Ilg equipment has been included on over 2000 ships in the past two years—destroyers, PT boats, mine sweepers, aircraft carriers, cargo ships, tankers, troop ships and many special craft of secret design.

Motion Picture Lessons in Grinding, a six-page brochure, published by the Norton Company, Worcester, Mass., illustrating and telling how to obtain four technical sound films covering the following subjects:

Film No. 1—Cutter Sharpening

Film No. 2—The Cylindrical Grinder

Film No. 3—The Surface Grinder

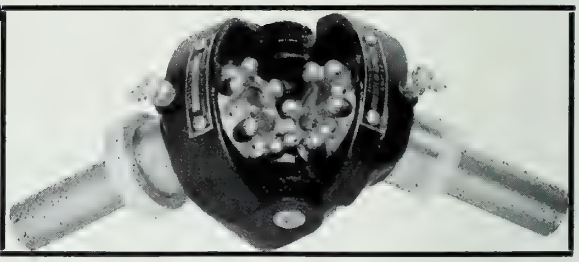
Film No. 4—The Grinding Wheel—Its Care and Use.

These films may be obtained by responsible parties for one-time showing at no charge except for return transportation, or they may be purchased outright for permanent use. They should be of great value in training apprentices or new labor.

Steel Flooring, an informative folder on open steel flooring and steps, has just been published by Kerlow Steel Flooring Company. The folder concisely describes the principal patterns of gratings and their applications, includes a tabulation of safe loads for various sizes, weights and lengths of this type of flooring, and explains details of constructions and methods of installation, together with photographs of typical installations. Copies of the folder can be obtained by addressing Kerlow Steel Flooring Co., 21 Mallory Ave., Jersey City, N. J.

New Opportunities for Design of Remote Controls with . . .

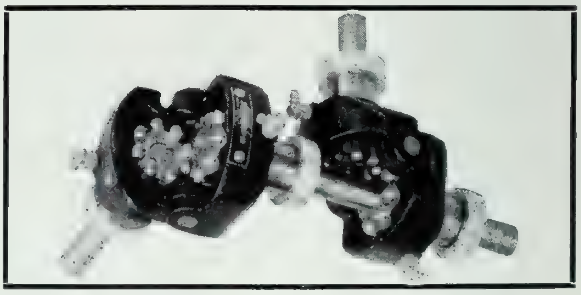
CONSOLIDATED BALL TOOTH HINGED JOINTS



Standard Model A unit of Consolidated Ball Tooth Hinged Joint.

The demand for flexible shaft joints having a wide range of angles, at which they may be installed and operated led to the creation of Consolidated Ball Tooth Hinged Joints. These joints have a positive and effective operating range from 0 to 92°.

Naval architects have designed many special applications of Consolidated Ball Tooth Hinged Joints obtaining remote controls which have never before been possible. This is illustrated by the special combination pictured here.



Illustrating a combination of Model A and C units into a single unit to conserve space and reduce installation cost.

CONSOLIDATED BALL TOOTH HINGED JOINTS PROVIDE

1. Greater strength
2. Smoothness of operation
3. Direct lubrication to point of contact between each ball and socket.

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